

THE IRON AGE

A Review of the Hardware, Iron, Machinery and Trades.

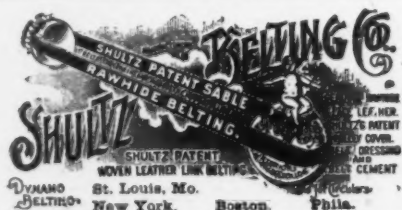
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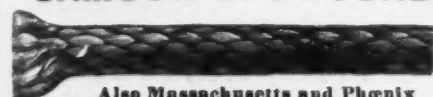
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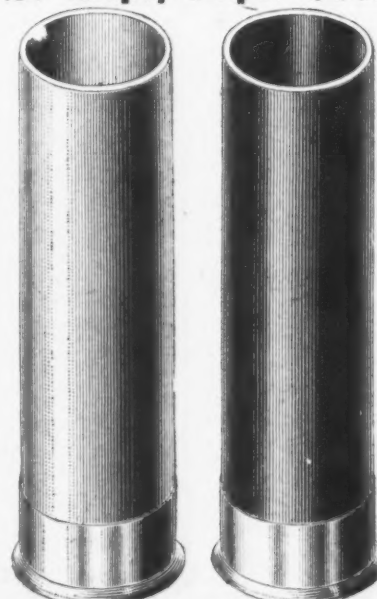
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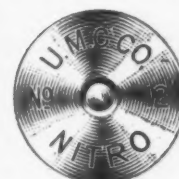


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THE IRON AGE.

THURSDAY, NOVEMBER 16, 1899

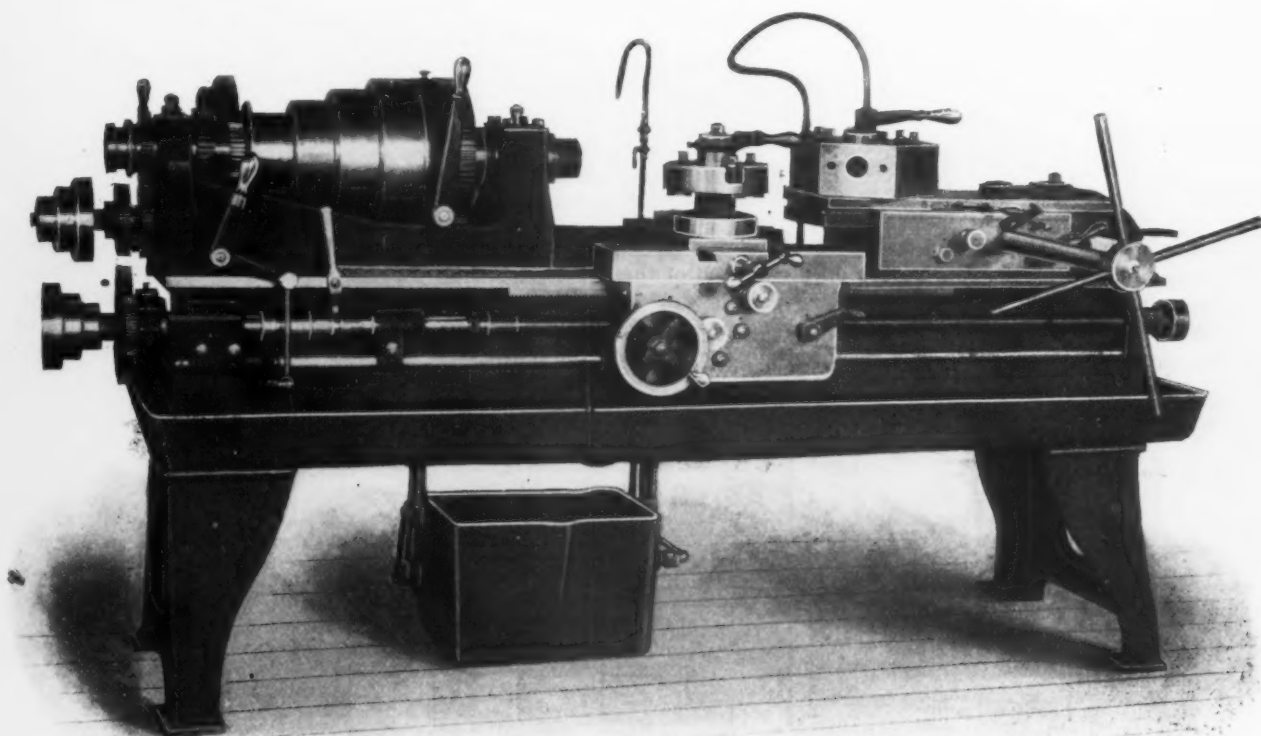
Chinese Purchase an American Flouring Mill.

Probably the most complete and thoroughly up to date flouring mill ever constructed is now on its way to Shanghai, China, from the shops of the E. P. Allis Company, Milwaukee, Wis. F. G. Marsh, one of the company's engineers, will superintend the setting up of the machinery. Not only is the mill claimed to be the most complete of its kind but it has been built for a company of Chinamen, paid for by Chinese capital and a force of Chinamen will operate it. Up to about one year ago all of the flour made in China was made in the good old primitive way of crushing and grinding the wheat by hand between two stones, one of them slightly hollowed out and the other rounded to fit in the hollow. A syndi-

gress. Dr. Wilson announced that the Philadelphia Commercial Museum, under whose auspices the congress was held, would ask the Philadelphia city councils for permission to change its name to the International Bureau of Commerce.

The Fay & Scott Universal Turret Lathe.

The accompanying engravings illustrate the principal features of a new universal turret lathe of 20-inch swing and 7-foot bed. The head stock is shown in section in Fig. 4. The front bearing of the spindle is $3\frac{1}{2}$ inches in diameter, and the hole through the spindle is 2 1-6 inches. The four-step cone carries a 3-inch belt. There is a friction device for locking and unlocking the



THE FAY & SCOTT UNIVERSAL TURRET LATHE.

cate of Englishmen then established an English mill in Shanghai, which, though not thoroughly up to date, caused a revolution so far as milling was concerned. There are some exceedingly enterprising Chinamen in Shanghai, however, and in order to astonish the Englishmen representatives were sent to this country to make an examination of American flouring institutions, with the result that the order was given to the Allis Company to build the mill. It has a capacity of 300 barrels a day and is very complete. Every part has been constructed by the Allis Company, so that all that remains to be done when the machinery reaches Shanghai will be to set it up, which will be done under the superintendency of Mr. Marsh.

At the closing session of the International Commercial Congress in Philadelphia on November 1 Dr. William P. Wilson, director of the Philadelphia Commercial Museum, was presented with a handsome set of silver ware by the foreign and American delegates as a token of gratitude for his services as chief organizer of the con-

gress. Dr. Wilson announced that the Philadelphia Commercial Museum, under whose auspices the congress was held, would ask the Philadelphia city councils for permission to change its name to the International Bureau of Commerce.

back gears by the movement of the lever shown in front of the face plate in the half-tone engraving. When this lever is thrown in one direction the cone is loose on the spindle and is connected by friction with the back of the face plate gear. The reverse movement throws this gear out of action, and makes the cone tight on the spindle. Provision is also made for throwing out the back gears in the usual way. The machine is double back geared—namely, by slipping the gear on the cone, the ratio of back gearing can be changed, thereby obtaining twelve changes of speed for the spindle.

The turret is hexagonal, 11 inches in diameter from face to face. It is provided with power feed, revolves automatically and has six $1\frac{1}{4}$ -inch holes, which, of course, can be changed to suit the requirements. An important feature of the turret is embodied in an automatic stop for each tool independent of the other. This device will be understood from the drawings, Figs. 5 and 6, the first being a plan view and the second a sectional side elevation. The outer or right hand end of the arm is pro-

vided with six set screws arranged as shown by the dotted lines in Fig. 5, and by the section in Fig. 6. These set screws can be adjusted independently of each other so as to control accurately and positively the forward movement of any one of the tools carried by the turret independently of any of the others. The end of the lever carrying these set screws brings them successively

front of the head stock. This device can also be operated by the lever at the left hand end of the apron. There is also an automatic stop provided which operates by the revolution of the lead screw.

In place of the usual tool block on the carriage there is the tool turret, Fig. 9, 4 inches in diameter, which is connected with the cross feed. This turret is revolved

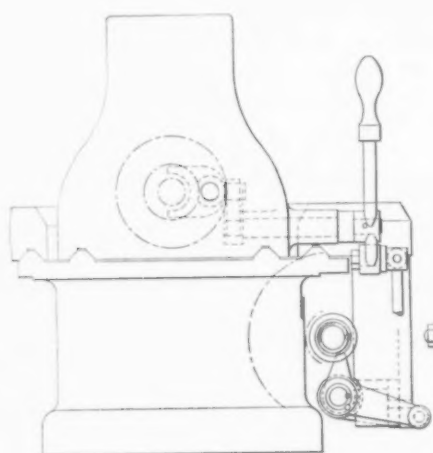


Fig. 2.

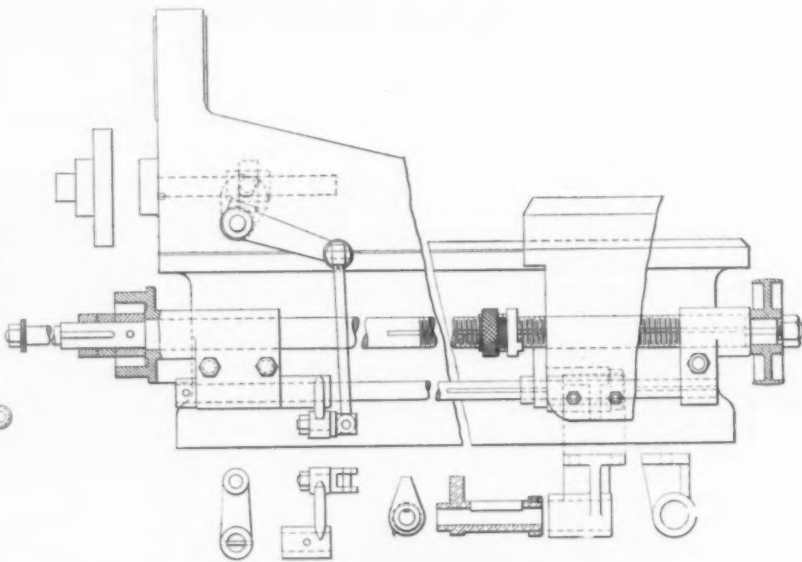


Fig. 3.

Details of Bed

in line with the stop shown in Fig. 6. This movement is accomplished by the cam groove on the bottom of the turret, indicated in Fig. 8. The curve of this cam is such as to move the end of the lever from one stop to the other at each one-sixth of a revolution of the turret.

by the hand lever shown on top in Fig. 1. A single motion of this lever to the right and back again unlocks, revolves, locks, and binds the turret in position. An oil pump is a part of the equipment which supplies oil to the center stem of the turret, as well as over the carriage.

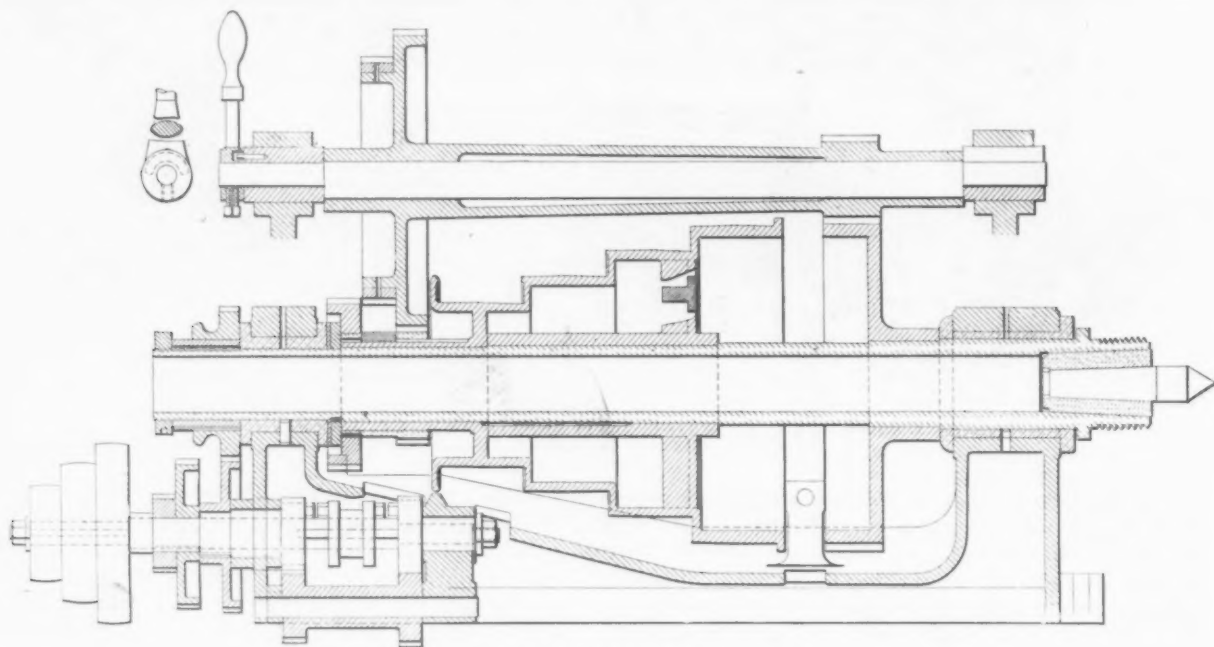


Fig. 4.—Head Stock.

THE FAY & SCOTT UNIVERSAL TURRET LATHE.

Provision is also made by means of which any one of the set screws can be skipped if this should be necessary. Power feed for the turret is obtained from a pulley on the end of the lead screw, which works through a worm and gear to a rack and pinion, as indicated in the cross sectional view, Fig. 7.

The belt feed of the carriage and screw cutting feed are driven from the gear on the outer end of the live spindle, and arranged with spur gears inside of the head stock for reversing the motion, by means of the lever shown in

The countershaft has two self oiling rim friction pulleys 12 inches in diameter by 4 inches face, and is intended to make 125 to 150 revolutions. This lathe is built by Fay & Scott of Dexter, Maine, for whom the Prentiss Tool & Supply Company of 115 Liberty street, New York, are the sole sales agents.

According to official statistics, coal miners in Illinois have averaged \$100 more in earnings per capita than they did last year.

The Cost of Steel Structures.

As a preliminary to a visit to the Homestead Steel Works by the members of the American Institute of

to the total weight in pounds of the structural material required: N is equal to the number of floors, including the roof as a floor, and F is the number of square feet in each floor. The first number inside of the parentheses when multiplied by the factor $N F$ will give

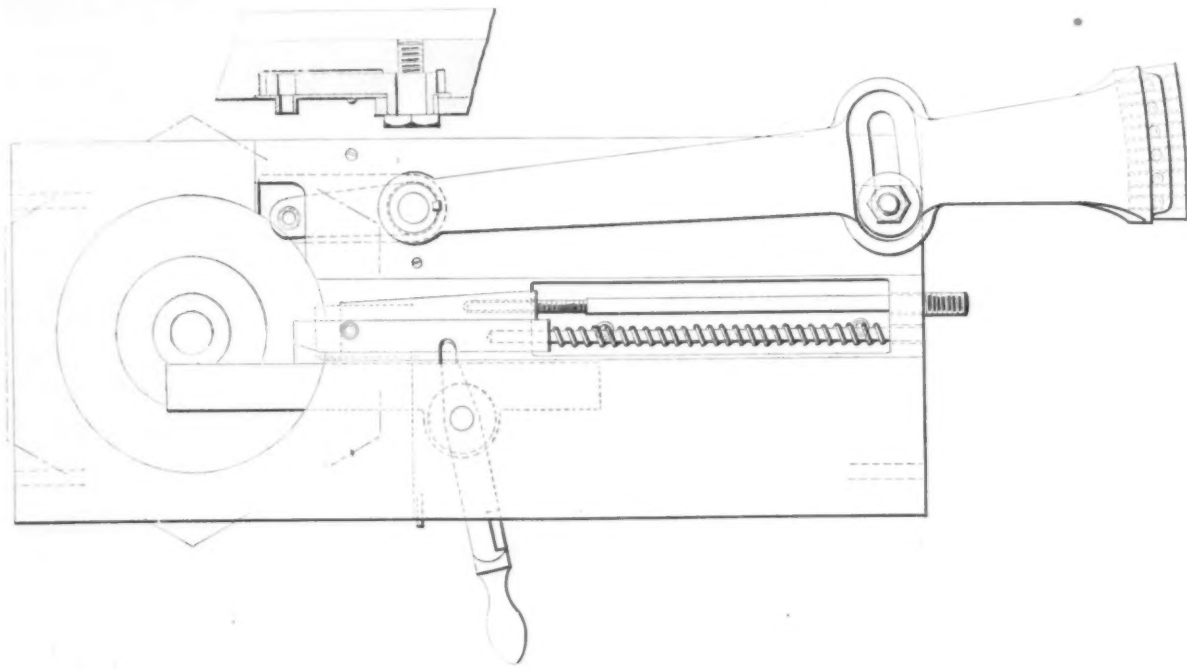


Fig. 5.—Turret.—Plan.

Architects, F. W. Kindl of the Carnegie Steel Company, Limited, read a paper on the "Manufacture of Steel for Building Construction." We quote from it the concluding portion which deals with the question of cost:

The total cost of the structural steel erected in a building of course depends upon the weight required and the current quotations for the plain material, as well as upon the workmanship thereon, its hauling to and erection at the building site. The weight of structural steel in a building is very difficult to estimate, unless plans and specifications are first drawn up, as this will depend upon the design, the number of stories, the dead and live load to be carried per square foot of floor, the weight of brick or stone work resting on the outside girders, and the allowable unit stresses on the steel. While the allowable stresses per square inch are pretty well determined by our building laws, which are almost identical with each other, yet the former factors are of so wide range as to make each individual case different. However, for the weight of the steel skeleton of the average office building, whose walls are carried by the steel work, we have found by careful records

the weight of the beams and fittings required in the floors, while the second member multiplied by the same factor represents the weight of the columns. Thus we

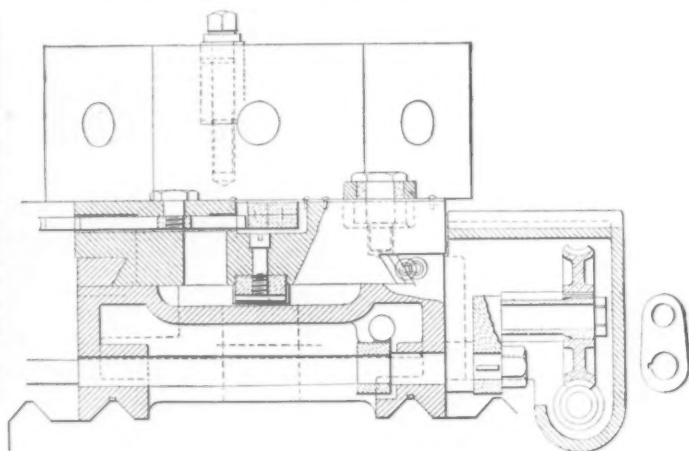


Fig. 7.—Turret.—Cross Sectional Elevation.

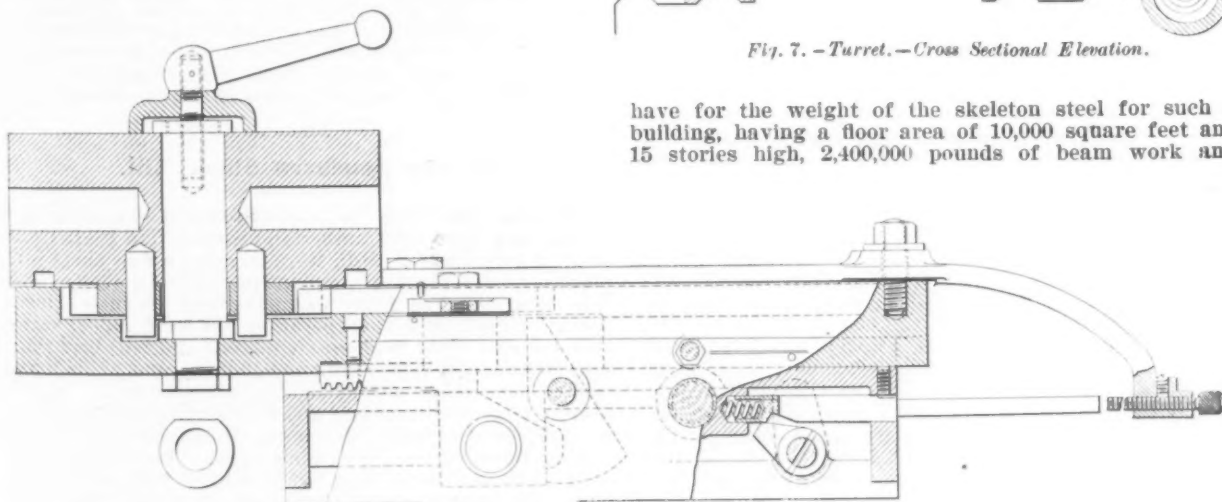


Fig. 6.—Turret.—Sectional Side Elevation.

have for the weight of the skeleton steel for such a building, having a floor area of 10,000 square feet and 15 stories high, 2,400,000 pounds of beam work and

THE FAY & SCOTT UNIVERSAL TURRET LATHE.

of the weight of steel required that the following formula can be used with sufficient accuracy for preliminary estimates:

$W = N F (15 \text{ plus } 7/10 N)$, in which W is equal

1,792,000 pounds of column work, or a total of 4,192,000 pounds of steel work.

As regards the cost, while this will vary somewhat, due to design, we might safely assume that unless the

construction is complicated, owing to an irregular lot line or unusual construction such as is found in theatres, music halls, &c., the average cost for fitting beams will seldom exceed $\frac{1}{2}$ cent per pound above the price of plain material, including the painting, while for column work, $1\frac{1}{4}$ cents per pound above the price of plain material. We have, therefore, for our building noted above, assuming the price of plain material will average 2 cents per pound, the cost of the beams would be $2\frac{1}{2}$ cents per pound, and that of the columns $3\frac{1}{4}$ cents per pound, or a total cost of the beams, \$60,000, columns, \$58,240, making a total amount of \$118,240 for the steel work, f.o.b. cars Pittsburgh, painted. To this must be added the cost of freight, hauling and erection. The hauling can generally be done for 50 cents per ton, while the erection will seldom exceed \$6.50 per ton, thus making the hauling and erection \$7 per ton. The hauling and erection of the steel for our building would therefore be \$14,672, making a total cost of \$132,912 for the steel work, erected in Pittsburgh, as per your plans and specifications. These figures are kept somewhat on the safe side, and appear high to-day, owing to having used a base price of 2 cents per pound for the plain steel, which, as you know, is almost double the market price of one year ago.

dation of the Susquehanna and New Haven companies with a capital of \$10,000,000.

The Pennsylvania Steel Company have purchased the Lochiel Furnace at a price said to be \$112,000. This furnace has a daily output of about 70 tons and the product has been used by the Pennsylvania Steel Company for several years.

The tin plate mills of the Lalance & Grosjean Company have not been operated full time for several weeks owing to the scarcity of materials. This plant has a capacity of about 160 gross tons per week, so that the requirements are not small. Steel is now coming in from the West in good quantities, but coal is scarce, the shippers still making the plea that they cannot get cars.

The absence of sufficient coal is also causing trouble at the other mills, especially at the Pennsylvania Steel works. There is also much delay in the shipments on account of the car famine.

Foundations are being laid for a large machine shop for the Pennsylvania Steel Works. It will be fitted with all the modern machinery.

There has been an increase of 10 to 15 per cent. in the wages of the 1500 employees of the National Tube Company at Middletown.

The sale of the property of the Harrisburg Mfg. Com-

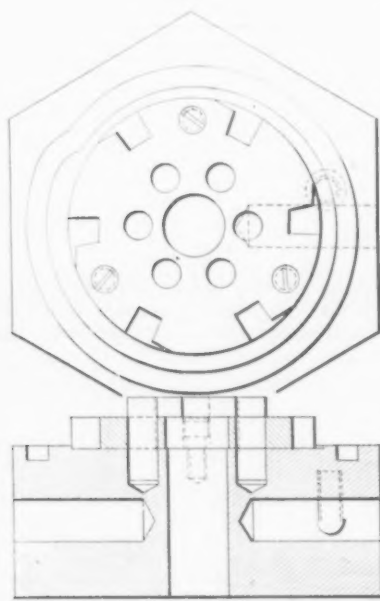


Fig. 8. - Turret.

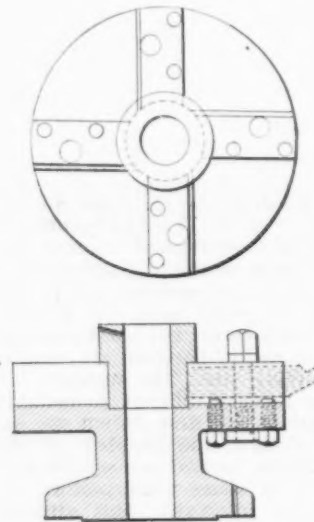


Fig. 9. - Tool Block.

THE FAY & SCOTT UNIVERSAL TURRET LATHE.

Since writing this paper the price of steel has again advanced and the cost of our building would now be very nearly \$15,000 more.

Central Pennsylvania News.

HARRISBURG, November 13, 1899.—The manufacturers of steel and iron in this territory are satisfied with the condition of the market, and they anticipate no diminution of the demand for many months to come. They have looked over the ground very carefully and the future is apparently as bright with promise of still greater business as at any time within the last six months. The demand is phenomenal. Those intimately connected with the management of the Susquehanna Iron & Steel Company's furnaces and mills in the Columbia region say that the business has largely exceeded the most enthusiastic estimates of the promoters of the combination. The two furnaces are turning out about 150 tons of pig iron daily and the profit is large. The skelp and bar mills are also running to their greatest capacity at a handsome margin of profit so that the statement that the company made a clear profit of nearly \$200,000 the first three months of the operation of the various plants under their control is readily believed here. John Q. Denny, the general manager, is a practical ironmaster and he has the utmost faith in the future of this group of mills. No orders are being closed for the new year because the company know that the prices will be higher and are not anxious to make any long time contracts. All the mills are crowded with orders. It is understood that the plan has about been agreed upon for the consoli-

pany was accomplished by the receiver last Thursday. The proceeds were about \$150,000. The Pennsylvania Railroad Company bought a large slice along their line, and another piece was purchased by E. B. Mitchell for an industrial plant. s.

A New Southern Sheet Mill.

Mention was made in these columns a short time ago of the fact that the Cumberland Steel & Tin Plate Company of Cumberland, Md., were erecting a new sheet mill plant near the black plate plant purchased a year ago by the American Tin Plate Company and recently closed down for good by that corporation. A local report states that the new plant is about completed and will be a four-mill sheet plant, comprising one 48 inch, one 38-inch and two 26-inch mills, with two stands of cold rolls. It will shortly be ready to operate and will employ almost, if not as many men as were thrown out of employment by the closing down of the black plate plant. Besides the ordinary Bessemer sheet iron the company will make black plates for stamping and enameling, produced from sheet bars rolled from stock made in the new acid open hearth furnace recently built by William Swindell & Brothers and now in successful operation.

The sheet mill building, constructed entirely of steel, is 80 x 250 feet and was erected by the Fort Pitt Bridge Works. Among the equipments is an improved Mesta pickling machine, capable of treating sheets 12 feet in length. The entire plant is lighted by electricity furnished by dynamos, which also drive an electric traveling crane. H. H. Dickey of Cumberland is president of the company.

Early Rail Making in the United States.*

BY JOHN FRITZ, BETHLEHEM, PA.

I now prepared to suggest building a three-high mill, which I did, and the suggestion was met with a rebuff, which was not unexpected. . . . The officials called a meeting, and, after consultation with some practical iron men, decided to put up a geared two-high mill, and, by greatly increasing the speed of the rolls, the rail would be finished in much less time, and consequently at a higher heat, which would prevent the serious trouble of rough and torn flanges. I was ordered to build a new mill, two-high, geared. . . . I most emphatically said I would not do it, as two of the most objectionable features of the present system would still be retained. . . . I consequently concluded that I would do as I had been compelled to do before and many times since—assume authority and go ahead, which I did, and commenced work on the patterns. The drawings had already been practically completed. After the pattern for the housing was well advanced E. Y. Townsend, the vice-president, came out to the works and I informed him of what I was doing. . . . In about a week he came to the works again. This time he was armed with a legal document opposing the spending of the money in the way it was being done. He handed me the document to read, which I did. . . . After some friendly talk on the condition and the importance of the change proposed, he said: "Go ahead and build the mill as you want it." "Do you say that officially?" To which he replied: "I will make it official." And he did so.

When I look back to that talk, which took place on a Sunday morning long years ago, and recall to mind Mr. Townsend and myself, with evidences of failure on all sides and surrounded by the gloom of future uncertainties, I cannot but feel it was a critical period in my own history as well as that of the Cambria Iron Company. To E. Y. Townsend belongs the credit not only of the introduction of the three-high rolls, but also for a large share of the subsequent marvelous prosperity of the Cambria Iron Company which followed the introduction of the three-high mill and its many accompanying improvements.

At length the mill was completed and on July 3, 1857, the old mill was shut down for the last time. . . . The starting of the mill was the crucial period. There were no invitations sent out. As the heaters to a man were opposed to the new kind of a mill we did not want them about at the start. We, however, secured one of the most reasonable of them to heat the piles for a trial. We had kept the furnace hot for several days as a blind. Everything being ready we charged six piles. About 10 o'clock in the morning the first pile was drawn out of the furnace and went through the rolls without a hitch, making a perfect rail. You can judge what my feelings were as I looked upon that perfect and first rail ever made on a three-high train.

Everything worked well up to noon on Saturday, it being our custom to stop rolling at that time. About 6 o'clock in the evening Mr. Hamilton and myself left the mill, and on our way home congratulated ourselves on the fact that our long line of troubles and disappointments was now over. About an hour later I heard the fire alarm whistle blow, and rushing back to the mill found it a mass of flames from one end to the other. In less than one hour's time the whole building was burned to the ground, and a story was started that the mill was a failure and that we had burned the mill to hide our blundering mistakes. The situation of affairs on that Saturday night was such as might appall the stoutest heart. . . . The next day being Sunday it was devoted to rest and to thinking over the matter. On Monday morning we commenced to clear up the wreck, all the workmen giving a full day toward it, and to begin the work of rebuilding.

In four weeks from that time the mill was running and made 30,000 tons of rails without a hitch or break of any kind, thus making the Cambria Iron Company a great financial success, and giving them a rail plant far in advance of any other plant in the world. This position they held, unquestioned, for both quality and quantity, until the revolutionary invention of Sir Henry Bessemer came into general use.

In the construction of the three-high mill there were many changes and improvements on the old two-high mill. Up to this time the leading spindles had a groove cut in them to weaken them, so that any extra strain coming on the rolls they would break instead of the rolls; the couplings were made light, so as to act as a kind of safety valve. Then there was a breaking box

placed between the screw and the roll. If there was not one of these safety devices breaking each day the pattern was made lighter. The result was some of them were breaking several times daily and were a constant source of annoyance. In building the new mill they were all made so strong that they were not calculated to break. The breaking boxes on top of the rolls were made solid, as they were apt, when they gave way, to break the collars on the rolls, which should, if possible, be avoided. All this change was stoutly opposed by the workmen, and the foremen of the mill were much opposed to it also. . . . I replied that I would rather have a grand old smash up once in a while than be continually breaking something and keeping the mill standing half of the time and the metal wasting in the furnace. The mill made 30,000 tons of rails without a break of any kind, which, at that time, on iron, was nearly a year's work.

The Introduction of the Bessemer Process.

In 1864 the Bessemer process was introduced. Its introduction and perfection will ever remain one of the most interesting epochs in the history of the iron business.

As already stated, the forge carpenter and millwright were superseded by the machinist. Immediately after the introduction of the three-high mill all the rail mills in the country were changed, and all the new ones that were built adopted the same plan. In fact, B. F. Jones, one of the oldest, most practical and successful ironmasters in the country, and one of the very first to see the advantages of the system, said to me that it was the commencement of the great improvement which took place in the iron works after 1857 which paved the way for the introduction of the Bessemer process.

Altogether the difficulties we encountered (in the introduction of the Bessemer process) were enough to appall the bravest hearts. My brother George once said that he did not believe there was a man that ever went into the Bessemer business, that had charge and was responsible for the result, who did not at times wish he had never gone into it; and, so far as my experience goes, I can fully verify it. And, further, I think, if it had not been for the interesting and exciting character of the business, that but few men would have been willing to endure the trouble and anxiety, and to bear the labor and danger which he and the workmen were constantly exposed to, long enough to have placed the business on a commercial basis.

I wish to relate a little reminiscence of Alexander Lyman Holley, who was the consulting engineer of all the Bessemer steel works. We had a heat of steel get into the pit, followed by a moderate explosion, but no one was hurt. After the pit was cleaned up ready for work again I was relating to him some of our troubles, and had just turned around to go away when they let an ingot fall off the car on its way to the rolls, and it was beyond the reach of the crane. I said to him, "There it goes again." He said, "Yes, but that will lie still."

It should not be forgotten that England is the birth-place and home of the Iron and Steel Institute, and much of our success is due to the information we gained from the invaluable papers read at its meetings and the discussions that followed them. Here I wish to say that I should commit an act of ingratitude should I fail to give credit to the brave and noble workmen who throughout my long connection with the business have ever stood ready to meet any emergency, no matter what the danger or difficulty might be.

Having already intimated that the United States was not the original home of the iron and steel industry, I will again refer to it. When I look back to my early days in the iron business, long, long ago, probably too long, it brings to mind one of the happiest periods of my life. After my daily labor was done I was free from all care until the next morning. After supper at half-past six, then a simple meal, I returned to the works and helped the puddler, heater or roller, as the case might be, until about 10 o'clock. At that time the practical men—puddlers, heaters and rollers—were generally foreigners—English and Welsh. After the heats were charged in the furnaces, and while waiting for the charges to become heated, they would get their pipes and sit down on a pile of pig or puddled iron, as it happened to be most convenient, and take their smoke. I would take a seat by them, and then they would tell me about the works in England and describe how their mills were arranged, their system of rolling, the principle and construction of their puddling and heating furnaces, and how to work them. As I spent my nights in assisting them to puddle, heat and roll I gained a very general practical knowledge of the manufacture of wrought iron, which soon became of great value to me; and to the nights spent in the works with these hearty and generous workmen I owe much of whatever success I may have attained in after life. For the kind and generous man-

* From an address before the Franklin Institute on the occasion of the celebration of its seventy-fifth anniversary.

ner in which I was always treated by them they ever have a green spot in my memory. In comparing this happy period of my life with what I have since many times gone through it might, with propriety, be compared with the "Elysian Fields."

How little do the younger men who have charge of the great iron and steel industries know or even think of the severe mental strain, the great amount of bodily labor, the vexation, the surprises and the disappointments that the men in charge experienced during the perfecting and erection of these vast establishments that are now engaged in the manufacture of iron and steel.

Lake Iron Ore Matters.

DULUTH, November 12, 1899.—Your correspondent had been expecting heavy shipments late in the fall, but he was astonished, with others, when October showed up with enough to make the total to November 1 about 15,000,000 tons. November so far has been an excellent shipping month, and the total for the year will be still larger than was anticipated a week ago. The Gogebic range has now reached the total of 1892, a little under 3,000,000 tons, and will materially lead all its past records for the season. The Mesaba will make a total of about 6,000,000 tons. Freight rates have again sagged, this time to \$1.25 from the head of the lakes. This is due solely to a lack of demand for tonnage for grain, and the slacking of ore movement by the shipment of all stocks. Grain is moving in a trifling way, there seeming to be no demand for export or Eastern consumption. One of the exporters in Duluth recently stated to the writer that they were going into the winter after the most unsatisfactory season ever encountered. There is nothing to be told as to next year's rates from this present lapse of price, for there is likely to be in the spring not less than 2,000,000 tons of wheat alone at Lake Superior ports and tributary country elevators that must then be moved at some price. This is not mentioning the coarse grain on Lake Superior and wheat and other grains at Chicago, all of which are expected to be record breaking quantities. Coal is now coming West very slowly, for the alleged reason that there is not enough being moved from mines to Eastern lake docks, and there will be a shortage of fuel in the West the coming winter, which will necessitate very heavy shipments West in 1900. While we have "dun gone expanded" in one direction, we have also expanded in the merchandise movement to an extent that will maintain freights another year at a high notch.

There is little to report among the mines this week. They are closing up the season, and not much of an important nature is under way. Managers are too busy finishing and preparing for the coming onslaught on their reserves to get into new deals, and talk but little. In the Marquette section some things are transpiring. Laughlin & Co., Pittsburgh, who are exploring near Mountain Lake, have found such satisfactory indications that they have started a shaft house. Their exploratory shaft there is 100 feet deep. The Cleveland Cliffs Company are working hard to prepare the Michigamme mine for resumption, and unwatering begins shortly. The American Mining Company will put a drill on the Adams exploration north of Jackson at once. Tracks to the mines at Cascade will be built by the Chicago & Northwestern, indicating added business there another season. The Allen, Loraine and Jones are the properties to be reached. These have not been shippers. Captain Samuel Mitchell, manager of the Negaunee mine, has resigned, as he wished to do when the American Mining Company took charge. He was prevailed upon to stay a while. Captain Mitchell is perhaps interested, indirectly at least, in some new deals on the Vermillion range, and may become identified with them later. The Cleveland Cliffs Company have under construction a rock crusher to take chunks 30-inch cube. Such a machine will weigh 68 tons, will have a jaw of 10 tons weight and a shaft 11 inches solid steel diameter. It will be similar to those of the Minnesota Iron Company at Soudan.

In the Menominee district Oglebay, Norton & Co. have taken the May mine. The deal has been in prospect for some time, but it is now closed. This gives this company four mines, Alpha, May, Hollister and Bristol, besides some prospects, all near Crystal Falls. The Minnesota Iron Company are examining the Porter lands, near Crystal Falls, on which they have had options for some months at a 5-cent royalty for all ores. Ballou Mining Company are building a track to their mine.

The Duluth blast furnace is making a Bessemer pig by the use of all Mesaba ore of low iron content. Its ore running about 55 to 56 per cent. Williams is the main portion of the mixture. So far there has been no slip or other trouble with the ore in the furnace. Though the furnace is new and the force is untrained the 12-hour

output is running on this ore as high as 80 tons, which will be considerably bettered later. The results are encouraging.

Work is being carried on steadily with the copper propositions at the west end of the Keewenaw formation, a few miles south of the west end of Lake Superior. Results are such as to encourage prospectors to continue and they expect to work all winter on several properties. Fifty or sixty miles south of the west end of the lake copper rock is also being tested and careful explorations are under way. On the north shore of the lake, north of the Canadian line, copper outcrops of apparently high value have recently been found, and are under exploration now. It is an interesting fact that these latter are in a conglomerate rock, similar to that of Calumet. Some important zinc deals are also under way in the same locality; and there is a very remarkable awakening of interest in the mineral resources of the district from the northernmost point of Lake Superior westward to the Lake of the Woods. A railroad is now traversing that district, and it will open most of the mining camps.

Galena has been found near Swanzy, Marquette range, and explorations are under way there. D. E. W.

The World's Production of Iron Ore and Coal.

The following table, compiled by the American Iron & Steel Association, gives the production of iron ore and coal in all countries in 1898, or for the latest year for which complete statistics are available. English tons of 2240 pounds are used in giving the production of the United States, Great Britain, Canada, Cuba, India, New South Wales, and other Australasia, and "other countries," and metric tons of 2204 pounds are used for all other countries, metric tons being used as the equivalent of English tons in ascertaining the total production for all countries:

Countries.	Iron ore.			Coal and lignite.		
	Years	Tons	Percent.	Years	Tons	Percent.
United States.....	1898	19,278,369	26.17	1898	196,405,953	29.63
Great Britain.....	1898	14,176,938	19.24	1898	202,054,516	30.48
Germany and Luxembourg.....	1898	15,893,246	21.57	1898	130,928,490	19.75
France.....	1897	4,582,236	6.22	1898	32,439,786	4.89
Belgium.....	1897	240,774	0.33	1898	22,075,093	3.33
Austria-Hungary.....	1897	3,335,005	4.54	1897	35,939,417	5.42
Russia.....	1897	4,107,470	5.58	1898	12,862,033	1.94
Sweden.....	1898	2,302,914	3.13	1898	236,277	0.04
Spain.....	1898	7,125,600	9.67	1898	2,526,600	0.38
Italy.....	1897	200,709	0.27	1897	314,222	0.05
Canada.....	1898	51,929	0.07	1898	3,725,585	0.56
Cuba.....	1898	164,077	0.22	.....	.....	.....
South African Republic.....	.....	.....	.....	1898	1,907,808	0.29
India.....	1897	43,314	0.06	1898	4,568,880	0.69
Greece.....	1898	501,038	0.68	1898	17,300	.....
New South Wales.....	1897	234	.....	1898	4,736,400	0.72
Other Australasia.....	.....	.....	.....	1897	1,488,616	0.23
Japan.....	1896	27,421	0.04	1897	6,000,000	0.91
Algeria.....	1897	441,467	0.60	.....	.....	.....
Other countries (about).....	1898	1,197,259	1.62	1898	4,593,424	0.69
Totals.....	.....	73,670,000	100.00	.....	662,820,000	100.00

The American Steel & Wire Company, at Pittsburgh, have organized the employees into a number of fire companies, with all the latest fire fighting apparatus at their command and a perfect alarm system in all their works. Instead of carrying heavy insurance on the different plants in the Pittsburgh district the money will be used to equip the fire departments, by which a large saving is expected to be effected.

The Riter-Conley Mfg. Company of Pittsburgh have secured an order for six steel oil tanks, each having a capacity of 25,000 gallons, for the Dordtsche Petroleum Maatschappij of Sourabaya, Japan.

Iron ore deposits, described as being extremely rich and of large extent, have been discovered at Pojen, in Hungary. The deposits are said to occur in a mountain of about 3000 feet high. The ore appears at the surface in many places, and, it is claimed, contains no less than 40 per cent. of metallic iron. It is in contemplation to erect large iron works on the spot.

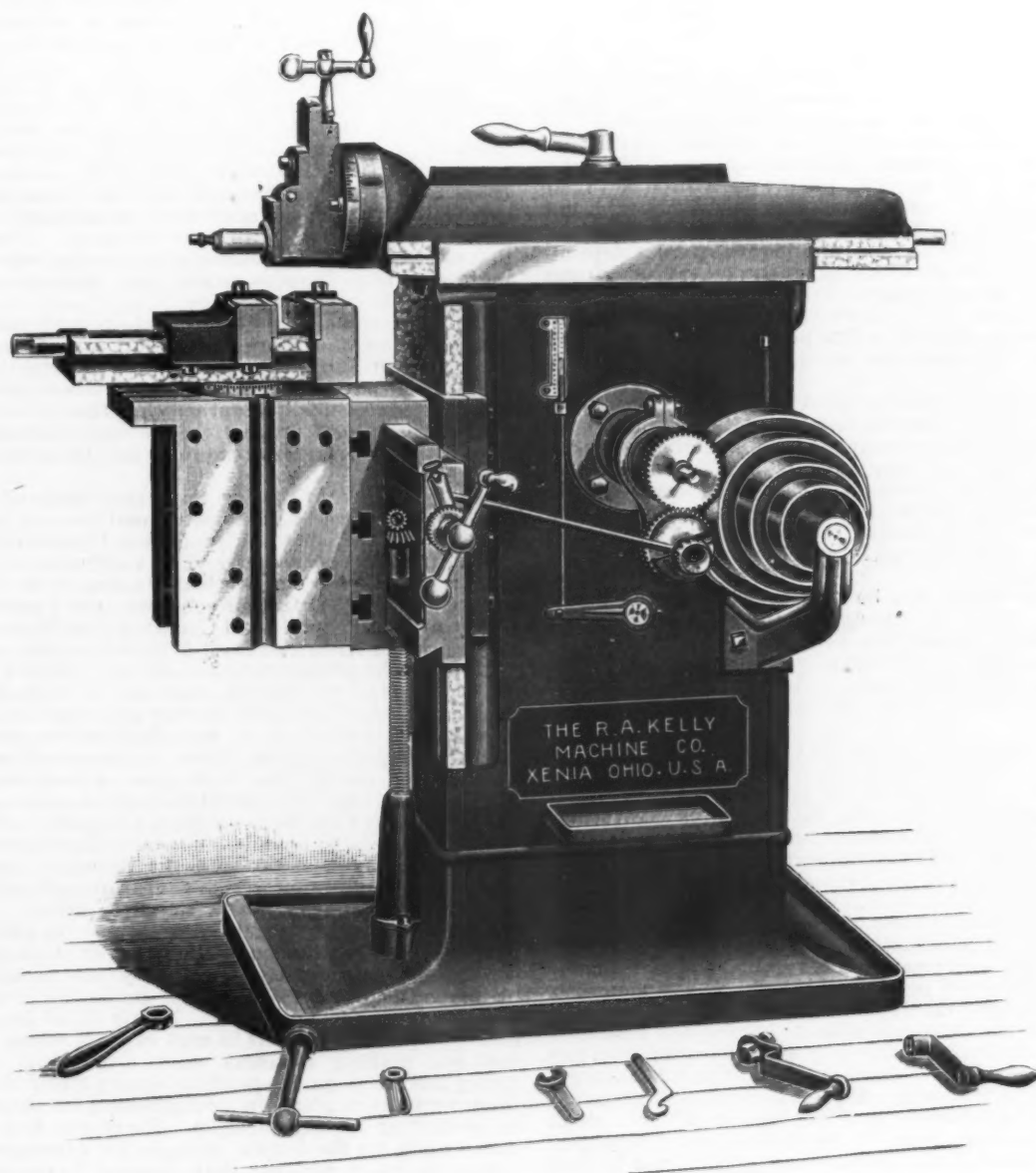
The conference between a special committee of the National Founders' Association and the Executive Committee of the Iron Molders' Association of North America held a two day session at Detroit, Mich., last week. The question of the establishment of a minimum rate of wages, which occupied a greater part of the time, was left unsettled, and it was decided to refer the question back to the organization which the committees represented, to be thoroughly discussed and matured before another joint conference.

The Kelly Adjustable Crank Shaper.

The R. A. Kelly Machine Company of Xenia, Ohio, have perfected a 20-inch crank shaper, as here illustrated. The ram has a long bearing surface, even at full stroke, and will not spring under the heaviest cut. The table is of the box pattern, and has horizontal T slots on the left hand side for bolting work which cannot be held in a vise. The right hand side has two vertical T slots and V-shaped groove in the center, thereby enabling the operator to bolt a shaft or other cylindrical piece of work which is to be planed while held in an upright position. A vise is held in a horizontal slot on the same side. The table can be detached from the machine and work bolted directly to the apron. The cross

chased and construction on the line is expected to begin in the spring. The line is to extend across country from the Monongahela River at Thompson Station to Finleyville in Washington County on the Baltimore & Ohio, and will be about 30 miles long. The right of way is that secured by the Mellons some time ago. The construction for the most part will be at grade and no very material cuts and fills will be necessary. Furnace slag from Carnegie Works will be taken along the route this winter and deposited for a roadbed, similar to that of the Bessemer and the Union Railway.

The claim is made that a Minneapolis chemist has succeeded in coking North Dakota lignite by a process involving so reasonable a cost of production as to excite



THE KELLY ADJUSTABLE CRANK SHAPER.

rail is made long so as to give the table sufficient travel. The apron has a dovetail slide on the bottom, where it is connected with the cross rail. The cross feed is positive and easy in operation. The stroke can be changed while the machine is in motion.

The crank motion consists of a rack and wrist, sliding on a cut gear, and which can be changed from the outside. Special effort has been made in the design of the machine to bring the crank which transmits motion to the rocker arm as high as possible, thereby imparting the maximum power to the ram while taking a cut. The main dimensions are: Length of stroke, 20 inches; automatic cross traverse, 27 inches; vertical adjustment, 18 inches; bearing of ram in the slide at full stroke, 29 inches; top of table, 12 x 12 inches; weight, 2200 pounds.

The Monongahela Southern Railroad, at Pittsburgh, is to be built as a feeder to the Pittsburgh, Bessemer & Lake Erie Railroad. Rights of way have been pur-

much hope among those locally interested of the early utilization of this fuel, which exists in large deposits. It would be remarkable, indeed, if the discovery at Minneapolis and the Leiter experiments at Chicago should both provide methods of converting this hitherto almost worthless material into a valuable commercial product. The material development of the Northwest would be wonderfully stimulated by the opening up of a native supply of fuel not only for domestic but for metallurgical purposes.

The annual report of the United States Post Office Department for the fiscal year ended June 30, 1899, just made public, shows a volume of transactions aggregating about \$640,000,000 for the fiscal year. The revenues of the postal service were \$95,021,384, and the expenditures \$101,632,161, while the volume of money order transactions was \$442,483,354. Every division of the business of the Department showed a large increase.

New Phases in the Iron Trade.*

BY CHARLES KIRCHHOFF, NEW YORK.

To every one in the iron trade it is imperative to study, from the standpoint of his own interests, the recent developments in the industry. That they are far reaching and must influence every department of it is obvious. Some of these developments have been of gradual growth and have reached an acute stage only lately; others have come upon us very suddenly. The recent enormous rise in prices, due to a great expansion in the demand, may temporarily obscure their effect, but the day is coming when the new conditions will exert a paramount influence. For the territory of which Philadelphia is the manufacturing and financial center, there may be much of menace in the two principal phases which are worthy of discussion to-night, the tendency toward the control back to the raw material and the crystallizing of the industry into very large units.

Let us turn first to the policy of the control of raw materials. That tendency has always existed. In the olden days the charcoal iron maker had great estates. He was forced not alone to control his fuel and his ore, but he also raised a large share of the subsistence of his workmen. Many of our modern plants have risen to their present magnitude upon foundations similarly laid, but on the whole, in the Central West, the tendency during recent decades has been more and more toward a dependence on the part of the iron maker upon others for ore and for coke. So far as the latter is concerned, the consistent and bold policy of Henry C. Frick during times of fearful depression in accumulating coke property was a revelation to the trade. It culminated in his alliance with Andrew Carnegie.

It was a distinct effort to secure a natural monopoly—in the sense that a tangible, indisputable advantage over rival natural resources confers at least a partial monopoly within the limits of that advantage. Contrary to the prevalent opinion, which assigns to the Connellsville region quality as its chief claim to pre-eminence, it is really the low cost of mining the coal and the low cost of hauling the coke to market which gives it the position which it holds.

One point should not be overlooked from the standpoint of the capitalist desiring to intrench himself behind a natural monopoly, and that is that the geological features of a coal bed make it possible to determine quite accurately the magnitude of the supply. The extent of a field like the Connellsville region can be determined almost to the acre.

It is not many years since that during a talk with the greatest iron master of this country the writer brought up the question of acquiring ore property, a policy which a great Western interest was then pursuing vigorously. He then made the point that such a course was not wise, since one took the risks that some prospector prowling in the wilderness might discover deposits overshadowing those just purchased at a heavy cost; that therefore risks were involved which no manufacturer should take. Later on, when his first purchases of Lake Superior ore property were made, this conversation was recalled and an explanation of the change of policy was asked. It was met with the reply that the chances of outdoing the more recently discovered mines were too slim to be counted a serious risk. The magnitude of the successive discoveries in the Gogebic, Mesaba and Vermillion ranges at first discouraged acquisitions: now a perfect craze seems to have come over the leading interests, with one exception. The great producing interests seem to be determined to cheapen cost by eliminating all intermediate profits, and in that manner get down to a fighting cost, which will assure to them vitality when competitors at home or abroad are gasping in the throes of bankruptcy. The same idea underlies the effort to control the transportation from the moment the mine car is loaded to the minute when the ore and fuel are automatically charged into the furnace.

Apparently this must lead to very high fixed charges, crushing in times of dullness and depression. The position of one large interest in recent years seems to point clearly to the fact that danger does lurk in that direction. But on the whole and in the majority of instances these fixed charges are in reality less than the aggregate of former profits of individual enterprises along the chain, averaging them over a series of years.

It is more probable that exploration and development work can be carried on more systematically and that production can be cheapened. The comprehensive work done by the Minnesota Iron Company on the Mesaba and Vermillion ranges may be cited as a brilliant example of what can be done in this direction.

One point which is made as a justification of the policy of controlling materials from the ground up is that the management is freed from the uncertainties of the supply

and the often violent fluctuations in the prices of raw materials; that with definite knowledge of this great factor in the cost sheets a far broader and more far sighted plan in selling product may be developed. That, it is naturally claimed, is of even greater importance in dealing with the export trade than it is with our own domestic markets.

A better adjustment between those strains on the individual links of production is possible which arise from the often violent fluctuations in the demand. For many technical financial and administrative reasons the production of all great manufactured staples should be as uniform as possible. On the other hand the demand must fluctuate within wide limits so long as sentiment rules business, human follies and ambitions control public events and the sun shines or the rain falls at times favorable or unfavorable to the growing crops. Everything that may contribute to reconciling these conflicting conditions tending down the strains, contributes to the advantages possessed by him who has so organized production and distribution.

The tendency in modern production is toward full employment of plant and equipment, the whole organization needing for its proper working the uniformity of clock work. In the iron trade economy of production is crowding the makers toward carrying the process forward from the ore to the finished material in one heat. The expensive equipment of machinery for automatic handling implies a heavy loss with every stoppage. The destruction of the value of appliances and plant through the rapid improvement in the arts means that their life must be a merry one however short it be.

All this tends to the same end—toward making production more and more inflexible; while consumption must remain subject to fluctuations, particularly in a country like our own, essentially agricultural as it is. In order to reduce such fluctuations and thus to react favorably on the cost of production, the natural course naturally is to seek a larger area of markets by cultivating the export trade.

Closely allied with this important phase of the iron industry is the recent great movement toward consolidation, not alone among the producers themselves but also among the large consumers. This movement is so recent that it does not seem necessary to deal with its details. Suffice it to say that four concerns—the Carnegie Steel Company, the Federal Steel Company, the National Steel Company and American Steel & Wire Company—together will in 1900 be producing at the rate of 7,750,000 to 8,000,000 tons of steel per annum, every one of them striving to obtain full control from the raw ore and coal to the finished product, either direct or through affiliated interests. Three of them are still sellers of billets, the intermediate product in the open market, but it is quite evident from recent developments that their ambition is finish more and more. The alliances of the National Steel Company with the tin plate and hoop companies and with the sheet industry, the close connection between the Carnegie and the car and bridge building interests, point in that direction. The evident tendency is to close outlet after outlet.

A glance at the situation, I believe, is sufficient to create a lively impression of the power of these great consolidations, particularly since they all appear to be utilizing the present windfall of profits for intrenching and fortifying their positions. Nearly all of them are, as noted, acquiring interests in coal, ore and vessel property and are making alliances with consuming interests. Every one of them is spending money freely in making improvements in plant, in strengthening its weak points, in perfecting its organization. Every one is getting its house ready for the fearful struggle for supremacy which is sure to come, whether that struggle be fought within our own borders or whether it be waged against European competitors in neutral markets. In other words, those who are formidable now are likely to be more so in the near future, since the principal elements of cost are bound to undergo a reduction.

If such be their strength, what are the chief elements of weakness? In other words, what opportunities have individual smaller concerns in a contest for existence or what chances are there for the establishment of new enterprises on their own merits? We may dismiss from consideration plants which are being or may be built with the principal aim to sell out after a brief show of capacity to inflict injury upon the large consolidations. That is a dangerous game, which may or may not prove exceedingly profitable. In spite of its risky character it is likely to be a factor of some importance in the near future.

One point raised frequently in connection with large consolidations relates to the heavy fixed charges which in hard times are a menace to the individual concern and are demoralizing to the industry in general, because they tend to bring about forced sales. In the iron trade there have been conspicuous instances of this influence in the past, but it is hardly fair to class the majority of the newer consolidations in this category. Very few of them have any bonded indebtedness worth speaking of. The

* An address before the Metal Section of the Manufacturers' Club of Philadelphia, November 7, 1899.

majority have a large capital, a part of which usually claims preference as to profits. Even if it be regarded as a fixed charge preferred interest has never seriously hampered manufacturing and selling operations, the dividends being allowed to accumulate with apparently few qualms. Whatever may be the feelings of the holder of such securities the competitor would make a mistake who seriously considered this charge as one likely to give him lasting advantages.

Generally speaking, considering the enormous product of these consolidations in the iron trade, the sum needed per ton to meet preferred interest is not heavy, and it is a question which many will answer in the affirmative from what little specific evidence we have so far that the economies of organized production and distribution will go very far toward meeting them.

A good deal has been said in speaking in behalf of these organizations, that important economies are effective in eliminating the waste of competition. As against that it is proper to place as an offset the loss of power through internal friction, which is a conspicuous feature of all large organizations, particularly when their operations are scattered.

Another advantage which large consolidations possess is their power to secure low rates of freight and their ability to raid local markets. They can draw upon the earnings arising from the controlled markets to pay for the injuries inseparable from local fights with minor competitors.

It may be gravely doubted whether all the efforts to control raw materials will succeed in keeping out or even seriously checking competition. To begin with, there is a very large supply which must always be available to support local plants of modest proportions, and that supply is the scrap and old material, as the basis of open hearth steel manufacture.

While a Bessemer plant must naturally represent a very large unit—not less than 1000 tons per day—and while no one to day would dream of running without the direct process (which implies a furnace plant also), the local open hearth works can start with a few furnaces, corresponding with the supply of cheap scrap and the extent of the local demand for the product. It can expand from that basis as the requirements call for enlargement. Plants of this character are likely to become a favorite means to the owners of finishing mills who see their future threatened by the fact that competing consolidations control the raw material or the intermediate product.

Another point which deserves consideration is the tendency to make coke a by-product in connection with lighting and heating plants for large cities. In that way probably important works will be built in a number of our leading cities using coke ovens whose main product is the gas, while the coke is one of the by-products. Particularly along our sea coast towns this may furnish the inducement for the establishment of steel works which will probably depend largely upon foreign ores for their metal.

But, after all, the questions whether old established plants may live under the shadow of the great consolidations or whether new enterprises will be allowed to grow up depend entirely upon the wisdom of those who manage these properties; their power depends upon their capacity to produce and market cheaply. That power they can nullify more or less by raising prices. Every advance makes available less favorably located mines and less well equipped plants. Every per cent. of additional earnings in capital is like a further magnet to outside capital to enter the business and the "striker" or blackmailer, as he is promptly called, will be among the first.

It is almost certain that human nature will succumb to the temptations of great power and that the managers of our consolidations will attempt to exact prices so high that competition will be very profitable. It is too much to expect that the enormous earnings of all of them at the present time will fail to accustom the managers to a scale of receipts which they will try to maintain by abusing their power to name and hold high prices. Even now some of them are preparing favorable conditions for further competition by a rigorous attitude with buyers which will make the latter go out of their way to promote the welfare of newcomers.

It has been assumed, and it may be admitted, that the tendency of the great consolidation in the iron business will be toward steadying values. A small group of men can far more effectively adjust differences than can a mob of competitors. That is true, but on the other hand the antagonisms are apt to become exceedingly bitter and personal animosities and ambitions may plunge the whole industry into fearful struggles. What we have more than once witnessed in the rail trade may occur again on an even much larger scale in other branches of the industry.

Another element incidental to the developments referred to is new to the iron trade. It deals with the relations between the industry and the stock speculation on the exchanges. It is broadly hinted that even now some in the management of large consolidations pay as much

attention to the ticker as they do to the balance sheets. Stock speculation and its methods, good and bad, must be taken into consideration as a motive and as a factor which may at times have a powerful influence on the iron trade.

On the whole, gentlemen, the inference seems justified from what little has developed during the career—still brief—of the great consolidations that, formidable as they may seem, their existence does not make it impossible that relatively small concerns in the same field may not live and prosper exceedingly.

The Chicago Labor Restrictions.

Employing interests in the Chicago building trades are contemplating aggressive measures against the arbitrary rules of the trades unions. If existing conditions are permitted to continue it is predicted that next year will witness almost complete stagnation in building in that city. A certain amount of work must always be done in the completion of contracts previously in hand or in repairs, but new enterprises will be discouraged. Facing such a prospect contractors and builders feel that the issue might as well be brought up in advance of the regular building season and fought out, as matters can hardly be made worse by such action. It therefore appears quite probable that at the opening of the new year, if not before, a complete lockout will take place in the building trades, to continue until the trades unions agree to more reasonable terms. In this proposition the employing interests appear to have the support of the people at large. They probably also have the secret sympathy of many workmen who belong to the unions and chafe under the tyranny of walking delegates and would like to have more individual freedom. That the situation may be thoroughly understood the working rules of two of the trades unions are herewith given.

First come the rules of the Journeymen Plumbers' Association put in force July 1, a comparison being made in brackets with the former amount of work done as computed by Samuel Smith, secretary of the Master Plumbers' Association:

Rule 1. When working on lead work eight wiped joints will be considered a day's work.

[Sixteen wiped joints in lead work was considered a day's work formerly.]

Rule 2. When working on iron pipe the measuring, cutting, threading and placing in position of fifteen threads of one inch or under shall be considered a day's work.

[Thirty-five threads applied to this case formerly.]

Rule 3. Ten threads on 1/4, 1/2 and 2 inch pipe shall be considered a day's work.

[Twenty-five threads formerly.]

Rule 4. When running soil pipe in a vertical manner the following shall be considered eight hours' work: 6-inch, 6 calked joints; 5-inch, 6 calked joints; 4-inch, 9 calked joints; 3-inch, 10 calked joints; 2-inch, 12 calked joints.

[Double this amount of work was done with ease.]

Rule 5. When running soil pipe in a horizontal manner the following shall be considered eight hours' work: 6-inch, 4 calked joints; 5-inch, 4 calked joints; 4-inch, 6 calked joints; 3-inch, 6 calked joints; 2-inch, 8 calked joints.

[From two to three times this number of joints could be finished in one day.]

Rule 6. When finishing on flats or apartment, hotel or office building one fixture shall be considered an average day's work, except laundry tubs, then each apartment shall constitute one fixture.

[Three fixtures in apartments and two or three in laundry tubs.] Rule 7. When working on Durham system the running of 2 1/2, 3 and 4 inch pipe, when working on stacks, three stories shall be considered a day's work. When working on 5, 6 and 8 inch pipe on stacks two stories shall be considered a day's work.

[When working on 2 1/2, 3 and 4 inch pipe five stories could be done. On 5, 6 and 8 inch pipe three stories were completed.]

Rule 8. Pump pipes, down spouts and other straight stacks of pipe, 2 1/2 and 3 inch, 50 feet shall be considered a day's work; 4 and 5 inch, 40 feet a day's work; 6 and 8 inch, 30 feet a day's work.

[Double the number of feet.]

Rule 9. In cases where work is of a complicated nature or workmen are delayed through no fault of theirs the absolute performance of amounts as laid down in this schedule shall not be considered compulsory by this association.

[This rule, which permits even further curtailment of a day's work, is one of the worst in the list.]

Rule 10. In all cases a fair day's work shall be performed, and all work done by members must be strictly first class.

Rule 11. Any member violating any of these rules shall be dealt with according to section 16 of working rules, which reads: A fine of one day's pay for first offense and two days' pay for second offense, and if he persists in his violation the association shall deal with him as it sees fit.

An instance of the manner in which these rules are applied by walking delegates is as follows: After the plumbing had been completed on a building a walking delegate visited it and figured on the work done. He decided that it had been finished a day and a half too soon and forced the master plumber to pay wages to 20 men for the day and a half thus computed.

The rules under which carpenters work are equally exacting, the following being a copy of the working rules of the Carpenters' Executive Council, issued July 1:

Article 1. No member shall work after the regular weekly pay day without receiving his wages in full. Any violation of this rule shall be punished by a fine of \$10, ruled off the job, or both.

Article 2. Any member accepting less than the minimum scale of wages or rebating any part of his wages to his employer shall be subject to a fine of not less than \$10, ruled off the job and not permitted to work for the same employer again.

Article 3. No member shall be permitted to work with a non-union carpenter or with any member who has an unpaid fine against

him in the organization to which he belongs, under a penalty of a fine of \$5.

Article 4. Any member found filing, grinding or repairing his tools in his own time or who takes his tools home to file, grind or repair, when in employment, shall be fined not less than \$10 or ruled off the job. Any member who furnishes a patent miter box shall be subject to a fine of \$5.

Article 5. Any member guilty of excessive work or rushing on any job shall be reported and shall be subject to a fine of \$5. Any foreman using abusive language to or rushing the men under his supervision shall be fined not less than \$10 and ruled off the job.

Article 6. Any foreman or timekeeper who steals time from the workmen by calling time a few minutes before starting or after quitting time shall be fined not less than \$10.

Article 7. No member shall work on a job where laborers are permitted to work with carpenter tools of any kind, set or level up joists on walls. Any violation of this rule must be reported by steward under penalty of a fine of \$5.

Article 8. Any member refusing to give the actual condition of a job when requested by the business agent shall be subject to a fine of not less than \$5.

Article 9. Any member refusing to stop work when ordered by the business agent, or treating him with disrespect, or using language unbecoming a brother workman, shall be subject to a fine of not less than \$10.

Article 10. Any member or members going to or remaining at work on a job while said job is on a strike, unless authorized by the business agent, shall be fined \$25 and ruled off the job.

Article 11. It shall be competent for any carpenter business agent, where he has reason to believe that article 1 or 2 has been violated, to order the carpenters to quit work. They shall be given an immediate hearing before a committee of any five carpenter business agents, three of whom shall constitute a quorum, and the president of the Carpenters' Executive Council to be the chairman, and if the evidence shall seem sufficient to said committee the men shall be ruled off the job pending their trial in their respective organizations.

With such regulations in force a union carpenter is compelled to work slowly. If he is not rather deliberate in his movements he is in danger of being fined for "excessive work" or "rushing" a job. In other crafts the regulations are said to be oral, tab being kept on the men by walking delegates who inspect the work daily. No union man is permitted under any circumstances to handle a tool or do a stroke of work belonging to another craft. A stone mason, for instance, who had cut a hole in a flag sidewalk for the insertion of a cast iron cover was fined ten days' pay by a walking delegate who caught him trying to chip a small fin from the casting to make it fit the hole. In short, in the estimation of Chicago labor leaders, working hard is a crime and they are trying to put a stop to it.

Some Advice on Trade-Marks.

Before the International Commercial Congress at Philadelphia Charles H. Duell, Commissioner of Patents, presented a paper on trade-marks in which he offered the following advice to manufacturers:

Do adopt and use trade-marks, not only for your domestic but for your foreign trade. When you select a mark be very careful that it is a lawful trade-mark and one to which your right is undeniable.

Do not adopt your own name as a sole mark for your manufactures. Every man undeniably has a right to use his own name upon his own goods to indicate their origin and ownership and as a guarantee of their quality and character. This right is common to all men, and therefore if there are 20 men by the name of John Adams each one of the 20 has as good a right as any of the others. True, he cannot use his name in an unlawful manner and from such use he will be enjoined, but a mark which consists merely of the name of the party using it is a very weak reed upon which to rely.

Do not adopt a geographical term. The Supreme Court of the United States has repeatedly held that no one can exclusively appropriate to his own benefit a geographical term so as to prevent others inhabiting the same or similar territory from dealing in similar articles. It is true that the decisions of the courts have not been uniform on this subject, but in every case, with possibly one or two exceptions, where the exclusive right to use a geographical term has been sustained some peculiar facts have led to the decision. If you wish to keep out of litigation don't select a geographical name for your trade-mark.

Don't adopt a descriptive word or name. It has been held by courts times without number that words or names simply indicating the quality or ingredients of the articles cannot be appropriated so as to prevent others from employing the same words upon the same articles.

Do not adopt a word expressing quality, grade or peculiar excellence. No one man has the exclusive right to use any word or symbol which merely indicates the excellence of his article. No more has he the right to exclusively appropriate for his products marks, letters, numbers or words which actually indicate the grade of the article. While I cannot say don't adopt a suggestive word (for such a word will generally be sustained by the courts) the greatest care should be used or you will enrich some member of my profession.

It is so easy to select a device or symbol or to coin a word that there is no reason why a manufacturer or a merchant should select as his mark anything which is not a lawful trade mark or which is on the border line and will in all probability land him in the courts. So many

alleged trade marks are presented at the Patent Office for registry and those not being lawful trade-marks having to be rejected, that I have felt impelled to make use of this opportunity to utter this note of warning. Through our labor saving inventions we are able to produce manufactured articles as cheaply as they are produced in many other countries where wages are much lower. If, then, our manufacturers send out only such of our manufactured products as suit the tastes and requirements of the people to whom they are sent we cannot fail to greatly extend our export trade in manufactured articles, and when once established, if we have adopted and used lawful trade-marks to indicate our ownership and title, there will be no reason why the trade once gained cannot be kept for an indefinite time.

The Westinghouse Steel Foundry.

A large and most complete steel foundry and steel forging plant will be built early next spring by the Westinghouse Machine Company at East Pittsburgh at a cost of about \$1,250,000. The plant will have a capacity of about 80 tons of steel castings and forgings a day, and will make the Westinghouse Company the only concern in the United States who manufacture everything for their engines, starting with the pig iron to the finished product. The step is considered an immense stride forward for Pittsburgh in engine building. The stockholders are expected to ratify the plans of the officials by increasing the company's indebtedness at a special meeting to be held in December. The new steel plant and forging shop will be erected to the west of the present large shops of the machine company at East Pittsburgh, between the shops and Braddock avenue. The plans will be prepared under the direction of E. E. Keller, vice president and general manager of the company and will provide for one of the most elaborate and modern plants ever erected in this country. The steel foundry plant will be a steel frame building about 400 feet long and 200 feet wide. Two modern 40 ton open hearth steel furnaces will be erected and a complete modern steel casting plant arranged for. The plant will have a daily capacity of about 75 or 80 tons of steel castings and ingots to be used in the forging shop. The forging shop will be of the same length as the steel foundry plant and will be so joined to it that the operations in the two buildings will be continuous and with the most economical methods. The forging shop will be about 150 feet wide and will be steel framed. Heavy steel hammers and hydraulic presses of the largest size will be installed, and it is expected to make engine forgings of all sizes up to 20 tons each, the largest size ever made for engine work. The forging shop will be complete with furnaces and all modern apparatus for the production of the largest work. The capacity of this shop will be in proportion to the output of the steel foundry plant. The new plant is largely built with a view to supplying the needs of the great Corliss engine addition that has been mentioned several times. About 350 men will be employed in the new shops in addition to those who will be required in the extension of the big machine plant now nearing completion. The new plant will make the Westinghouse Machine Company entirely independent of delays in securing material. The company now buy all their steel castings and the heaviest class of forgings, the medium weight and lighter forgings being made in their present forge. The company are now buying about 20 tons a day, but with the new mill engine department already filled with work for three years running the needs will run up to about 70 or 80 tons a day. The company will merely be compelled to buy their pig iron, and then the conversion of the iron into their various needs will be under their own direction. The new addition will also result in a large reduction in the cost of the engine material. The steel foundry and forging shops will be on practically the same lines as the shops designed for the proposed British Westinghouse Company's plant at Manchester, England. The Westinghouse Machine Company are now capitalized at \$3,000,000 and at present have only an outstanding indebtedness of \$350,000. The officials will request the stockholders to increase this latter indebtedness to \$1,600,000 to provide for the erection of the new buildings. The costly new additions now building will be complete in the early spring. With the steel foundry and forging shop the entire plant will be one of the largest and most complete in the world.

The Humbert plant of the American Tin Plate Company at South Connellsville, Pa., which has been cramped for room in the tinning and sorting and boxing departments since the works were enlarged from a four to a six mill plant, is being further enlarged and improved. Another stack has been installed in the tinning department, making ten in all, and an addition of brick and iron 40 x 60 feet is being built as well as one 30 x 80 feet. A new pickler is also being put in.

Cutler-Hammer Motor Starters.

The Cutler-Hammer Mfg. Company, Milwaukee, Wis., are manufacturing motor starters, of which the illustrations of two styles are here presented. Fig. 1 is an engraving of their style G overload motor starter, which includes all known safety devices in one. With this starter a motor is stated to be safe even with unskilled attendance. The automatic device is so arranged that when the current is broken the little magnet which holds the lever in "full on" position becomes demagnetized and allows the lever to fly back to its "full off" position. When the main current is again started no current will then flow through the armature until the attendant moves the lever over the series of contacts, starting the motor gradually, as usual. The magnet, moreover, is connected in series with the field of the motor and will thus protect the armature if by any accident the field circuit should become broken. The resistance of this magnet is so small that it has no effect whatever in weakening the field. It consumes but 2 watts of energy in $\frac{1}{2}$ to 3 horse-power sizes, and has a range adapted to motors which use anywhere from 1 to 5 per cent. in shunt field circuit. The lever is provided with a spring in the hub, tending to keep it in the "full off" position, making it impossible to carelessly leave the lever turned partly over the segments and burn out the rheostat. This arrangement guards against the disastrous results likely to happen when the supply of current from the generator is

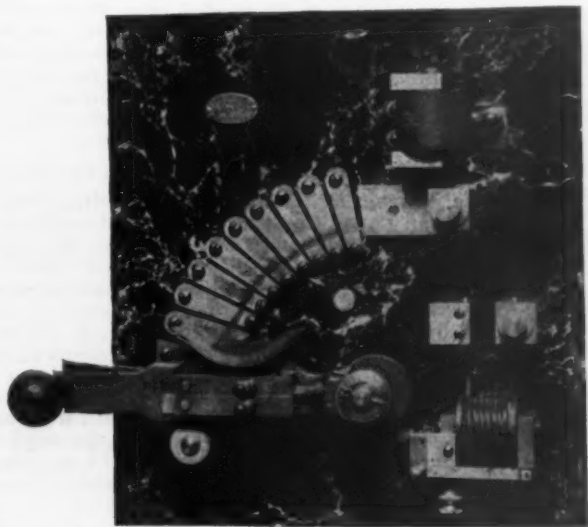


Fig. 1.—Overload Motor Starter.

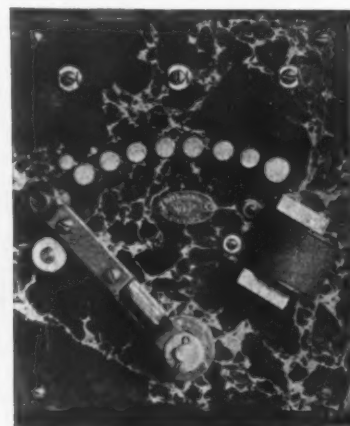


Fig. 2.—Starting Rheostat.

THE CUTLER-HAMMER MOTOR STARTERS.

cut off and then suddenly turned on again, which often destroys the armature if it is in the circuit.

Fig. 2, illustrating style A, shows a starting rheostat with automatic release. This has a spring lever and magnet. It can be furnished without the magnet if desired. These rheostats have marbleized slate fronts, generous contacts, ample carrying capacity and do not overheat. The resistance in the starting boxes consists of specially prepared asbestos tubes wound with a special resistance wire. It is almost impossible to burn out this resistance by overloading, the only way in which they can be destroyed being to run them hot for a long time. The tubes can be easily renewed without injury to the starting box when made necessary by long and continued overloading. The starters have no time limit and will not burn out if the operator takes a minute or more when starting a motor at full load.

Circulars have been issued from the office of the Pittsburgh, Allegheny & McKees Rocks Railway Company, who are controlled by the Pressed Steel Car Company, announcing that the North Shore Terminal Railroad, the Pittsburgh & Allegheny Railroad and the McKees Rocks Railroad Company have all been merged into the Pittsburgh, Allegheny & McKees Rocks Railroad Company, with E. A. Schoen general manager and Charles T. Schoen president. The consolidation of these three short lines will form an important connecting railroad between the works of the Pressed Steel Car Company in Lower Allegheny and the new works in McKees Rocks. A charter has already been obtained for a bridge to span the Ohio

River and form a connection between the different lines. This same connecting road will also provide a more expeditious means of exchanging freight between the Fort Wayne and the Panhandle, and between the Pittsburgh & Lake Erie and the Pittsburgh & Western. It will be of particular value to the Pittsburgh & Lake Erie, which has at present no Allegheny connection. The road will be operated independently and will transfer passengers as well as freight. It will be one of the most important short lines in the Pittsburgh district, as it will connect all the different roads with McKees Rocks, and will save 10 miles in the transportation of freight between the works on the Allegheny side and those on the west bank of the Ohio River. The Pennsylvania Company will be also benefited by the erection of the new bridge, and it is said that they may extend their Ohio connecting railroad down to the new car works west of McKees Rocks, and effect a loop via the new bridge which will enable them to move coal over a low grade all the way from the Chartiers Valley to the Fort Wayne yards.

Straits Tin Production

In connection with statements that are sometimes made regarding the difficulty, if not impossibility, of largely increasing the production of tin, some remarks by the Resident-General of the Federated Malay States upon the subject may be worth quoting. In the course

of an interesting report upon the progress of the Malay States, Sir Frank Athelstane Swettenham, the Resident-General, states that the rise in the price of tin last year was the main factor in the realization of the largest revenue ever yet collected. He proceeds to state that the rise was the result of a decrease in production brought about by low prices. "The present high average of price," he says, "will probably continue for some time; it will benefit these States, and I do not share the opinion of those who think that the supplies of Malay tin are being rapidly exhausted. The area of the State of Perak alone is put down at 6,400,000 acres, and out of that the total acreage dealt with up to now, either for agricultural or mining purposes, is the odd 400,000 acres. In Pahang, which is an even larger State than Perak, the tin deposits have hardly been touched. Whenever the price is anything like that which now prevails no word is ever heard from the miners in the Malay States to show that they fear a failure in the sources of supply. I have often before said publicly that there is no cause for anxiety on this account, and I see no reason to change that opinion now. There are, no doubt, still untouched and undiscovered immense areas of alluvial tin deposits, and there must be in many places, as yet unexplored, underground tin lodes such as those being worked in Ulu Bernam, Jebebu, Kinta and by the Pahang Corporation at Kuantan." There are difficulties, however, in connection with the supply of labor, the mining being carried on by Chinese coolies. Upon this point Sir Frank Athelstane Swettenham remarks: "It is a fact that, unless the supply of immigrant Chinese is increased the production of tin will be reduced for the very reason that it has risen in price. That sounds a curious statement, but the

explanation is that the Chinese now in the peninsula are free men, and they will not work for any wages that could be offered to them so long as they can make \$1 to \$1.50 a day by fossicking about on their own account. It is, however, a fact that Chinese immigrants are now beginning to come in. There has been distress in China; the high price of tin here is an attraction, and, whenever it is possible, the government makes it a condition of granting a larger area of tin land, or valuable contract for work, that a considerable number of Chinese immigrants shall be imported by the miner or contractor." The reports from the Residents in the various States are all much in the same strain, stating that though the production in 1898 was somewhat smaller than in the previous year, it was because the Chinese laborers were able, owing to the high prices, to supply their needs at the cost of a much less expenditure of labor. They conclude, in stating that, given a sufficient supply of labor, the ore resources are ample for many years.

The Iron Ore Mines of Elba.

In a dispatch to the Foreign Office, dated September 7 last, Major W. P. Chapman, British Consul-General at Florence, forwarded a report by Vice-Consul Toniatti, on the subject of the Elba iron mines. The following is an extract from the report in question:

The rights of the lessee of the Elba iron mines were acquired on July 29 last by a commercial company in Genoa (Società Anonima Elba) for the working of the blast furnaces, and for the exploitation of the Elba mines with a capital of 15,000,000 of Italian lire, to be increased to 25,000,000 lire. Among the promoters of the company the "Siderurgica Francese" represented by Creuzot, the "Siderurgica Italiana" represented by the "Ferriere Italiane" stand first, followed by some great Italian shipowners and bankers. The results that this powerful company may obtain by the exploitation of the Elba mines, and by the production of pig iron from the blast furnaces to be established at Elba, at Piombino, and elsewhere, cannot be foreseen at the present moment, but the striking fact remains that the company are actually the masters and have now in their hands at a minimum price almost all the mineral contained in the Elba mines as well as that lying in the district of Masso Marittima.

The Elba ores will cost them 80 centimes per ton, being the price to be paid to the lessor, Cavaliere U. Toniatti, for the transfer of his rights, and 50 centimes per ton, being the royalty due to the Italian Government when the ore is consumed in Italian furnaces—i. e., 1.30 lire per ton in all, a very small amount considering the advantage procured by the monopoly of one of the best mineral resources of the world. For the last 20 years the mineral stock extracted from the Elba mines has been almost exclusively bought by English firms, which have freely disposed of the same to be used in various countries in Europe and America. Previous to that time, for a period of about ten years, the French houses had been the larger buyers. Generally speaking the period of greatest activity for the Elba mines ranges between the year 1871 and December 31, 1898, when all the mineral extracted was reported, as follows:

Exports of Ore from Elba, 1871-1898

To—	Quantity. Tons.
Great Britain.....	2,125,545
United States of America.....	1,338,692
France.....	1,294,279
Italy.....	395,470
Germany (via Netherlands).....	296,597
Total.....	5,448,583

In forwarding the Vice-Consul's report, Major Chapman states that the father of Signor Ubaldo Toniatti had previously leased the mines, and under the old contract had paid as royalty 4 shillings per ton for mineral (washed ore) excavated in the mines of Rio; 3 shillings 3 pence per ton for mineral (lumpy ore) excavated in the mines of Rio, Vigneria and Rio Albano; 1 shilling 7½ pence per ton for same excavated in the mines of Teranova and Calamita.

When the new contract to commence from July 1, 1897, was put up to auction, Signor Giuseppe Toniatti, the late lessee, had died, and his son, Signor Ubaldo Toniatti, and son-in-law, Signor Roberto Marassi, both most anxious to secure the mines, ran up the bidding to 7.25 lire per ton, a price which some English gentlemen who came over for the auction stated was far too high to be remunerative, while at the same time expressing an opinion that no better ore than Elban existed anywhere.

The present lease is for 20 years, to be extended under certain conditions to 25 years, and during this time 200,000 tons of first-class and 50,000 tons of second-class ore

are allowed to be extracted yearly. At least 40,000 tons must be sold for use in Italian furnaces. Any quantity beyond this, required in Italy, must be supplied, but for that purpose they are allowed to excavate that quantity more than the agreed annual output. On this only 50 centimes royalty is paid to the Italian Government. Signor Ubaldo Toniatti will receive a minimum of 200,000 lire a year for 18 years for ceding the lease to the new company.

Canadian News.

A Deeper Channel for Ore Carriers.

TORONTO, November 11, 1899.—Since the Canadian Government suspended the clauses of the Navigation act prohibiting vessels of foreign register from carrying between Canadian ports there have been several inquiries from American lake transportation interests as to the depth of the Burlington Canal entering Hamilton Harbor. Among the companies thus heard from by the Hamilton City Council are Malcolm McDougall & Co., Duluth; the Duluth & Lake Superior Transportation Company, Cleveland & Lake Superior Transportation Company, Buffalo & Duluth Transportation Company and the Collins Bay Lumber Company. It is stated that the Hamilton Steel & Iron Company have been negotiating with some of these companies to carry ore down from Lake Superior. As the canal at the beach will scarcely allow a draft of 12 feet some of the larger of the vessels that can navigate the Welland Canal loaded would have to carry considerably less than their full capacity to get their cargoes into Hamilton Harbor. The letters of these transportation companies have been forwarded from the Hamilton City Council to Ottawa, with a view of inducing the Dominion Government to deepen the canal at Burlington Beach. In these representations to Ottawa it is pointed out that when the Quebec, Hamilton & Fort William Navigation Company get their new vessels the deepening will have to be done.

Shawinigan Power Company's Contracts.

Hon. Warner Miller has joined the directorate of the Shawinigan Power Company, who are developing a great water power at Shawinigan Falls, where the Shawinigan empties its waters into the St. Maurice. The falls are about 30 miles from Three Rivers, at the mouth of the St. Maurice. Other members of the Board of Directors are Senator Forget, A. F. Gault and J. N. Greenshields, all of Montreal. A contract has been given by the company to the I. P. Morris Company of Philadelphia to build two 6000 horse-power water wheels. These are to be completed by next June. They will be, it is said, the largest and most powerful in existence, the next to them being those of the Niagara Falls Power Company. Contracts will shortly be placed for the electrical generators, which will also be the largest of their kind installed anywhere. The canal for the development of 50,000 horse-power is now nearly finished. Several manufacturing concerns are negotiating with the company for power and sites. The Shawinigan Falls will be a great hive of industry in the near future. The capital of the company, \$6,000,000, has been subscribed in the United States and Canada. Cotton, alkali, aluminum, calcium carbide, pulp and paper are the chief commodities which will be manufactured at Shawinigan if negotiations now pending with several companies are successful.

Rebuilding Furnace.

The directors of the Hamilton Steel & Iron Company have decided to reconstruct the furnace and make other alterations involving a total outlay of \$50,000. When completed the furnace will have a daily capacity of 250 tons. The new buildings for the company's steel plant are now well on and the Bridge & Tool Company, who have the contract, will commence the construction of the plant in a few days. The steel works will, it is expected, be in operation by the time the furnace is in blast again.

Nickel Steel Works.

There is a report that the works of the Nickel Steel Company of Canada, a corporation who were organized last year with a capital of \$20,000,000, will be established in Hamilton. That city has a strong advantage in the possession of a blast furnace and of steel works. It is also as close to and as well connected with the ore fields as any other lower lake point.

The Board of Governors of McGill University, Montreal, have appointed F. W. Draper of Rolla, Mo., to be lecturer in metallurgy, in the place of J. W. Bell, who has taken a position in England. Mr. Draper is a graduate of the Massachusetts Institute of Technology, Boston. He left that institute seven years ago to take a place in the service of the Maryland Steel Company. Then he was employed as chemist and assistant metallurgist of the Chicago & Aurora Smelting Company. Later he was appointed professor of metallurgy in the University of Missouri.

C. A. C. J.

Killeen's Blast Furnace Skimmer and Metal Trough.

The blast furnace skimmer and metal trough shown in the accompanying illustration, for which United States and foreign patents have been granted to Michael Killeen, assistant superintendent of the Edgar Thomson Blast Furnaces, is meeting with considerable favor among furnacemen. This is demonstrated by the list of furnaces which have already taken out licenses for the use of the invention from G. H. Ginther, agent, Carnegie

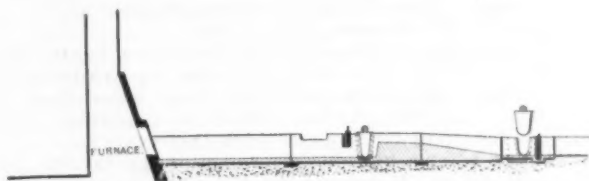


Fig. 1.—Section of Skimmer.

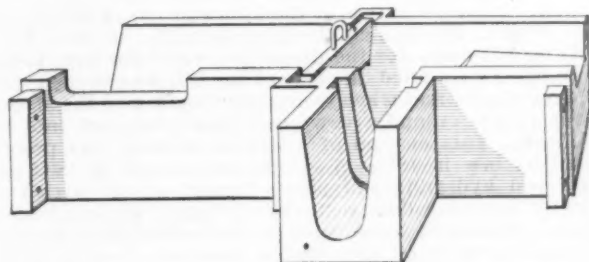


Fig. 2.—General View

THE KILLEEN FURNACE SKIMMER AND METAL TROUGH

Building, Pittsburgh, who reports its adoption by the following concerns:

	Furnaces.
The Carnegie Steel Company, Limited	17
Laughlin & Co.	5
National Tube Works Company.....	2
Lebanon Furnaces	2
Warwick Iron & Steel Company.....	2
American Steel & Wire Company.....	7
Lorain Steel Company	2
Aetna Standard Iron & Steel Company.....	2
Poughkeepsie Iron Company.....	1
Bellefonte Furnace Company.....	1
Douglas Furnace.....	1
Rosena Furnace.....	1
Republic Iron & Steel Company.....	1
Total	44

The invention relates to the casting of metal from the blast furnace into pigs or ladles, and is designed to largely do away with the expense, difficulties and dangers connected with this operation. Heretofore in this casting operation metal flowed from the furnace into a short metal trough, at the end of which was located a trough of sand provided with a skimmer and dam to raise the level of the metal above the lower end of the skimmer, the runners extending from this skimmer trough, being made of sand molded into form by the workmen. The construction of the skimmer trough and of the branch runners was a difficult and dangerous operation. A sudden rush of metal might wash away the walls, if not properly built. Any damp clay or scrap metal might cause the boiling of metal, a loss of the remainder of the cast, and great danger to the workmen, besides necessitating a delay in removing and replacing the troughs and scrap metal. Another difficulty is that as the bottom of the skimmer trough must be rammed loosely, so that the gases may escape, the weight of the metal upon this sand presses it down, thus bringing it to a lower level than that of the short iron trough. This allows hot metal to flow under this metal trough, and often causes explosions by contact with the water which is liable to collect in such a place. Moreover, the sand which always adheres to the metal in such operations is very objectionable for the succeeding uses to which the iron is put. This latter objection has lately been partly overcome by the casting machine or by employing chill molds. The runners, however, have always been molded from sand in the latter case, and the stream of metal is apt to carry large amounts of sand into the chills.

In order to overcome these difficulties, Mr. Killeen's invention provides a permanent metal trough, having a

skimming barrier and a dam below the barrier and projecting above the trough bottom, the trough having a drain opening above the dam to tap off the metal backed up by the dam. It is preferable to use a metal trough system leading to the ladles or molds, though this is not essential. Suitable shutters or movable gates are provided in the various runners, by which the stream of metal may be guided and controlled as desired. The runners may be protected from the cutting action of the molten metal by a lining or luting of clay, loam, or other refractory material.

The advantages of the invention are apparent. The skilled labor heretofore necessary to the molding of the skimmer trough and runner in sand is done away with and the operation requires very little labor, and that unskilled. The skimming is performed without any attention on the part of the workmen, and is free from the exhaustive labor and danger heretofore incident to such operations. The breaking out of the metal is avoided. The draining of the furnace trough takes away much of the heat from around the tap hole, and thus enables the workmen to plug it more securely, and the adhering of the sand to the pigs is avoided.

Many changes in the form and arrangement of the troughs and gates may be made. All castings for the skimmer and trough can be made in the open sand of the casting house.

American Air Power Company.

The annual meeting of the stockholders of the American Air Power Company, called in the first instance for October 19 and adjourned to November 13, was held in the offices of the company, at 621 Broadway, New York. The principal business that came before the stockholders was the election of a Board of Directors for the coming year. The old Board of Directors, consisting of Thomas Dolan, W. L. Elkins, Joseph H. Hoadley, A. A. McLeod and George E. P. Howard, was re-elected, with the exception of Mr. Howard, who retired and was replaced on the Board by H. H. Vreeland of the Metropolitan Street Railway Company. The resignation of A. A. McLeod, president of the American Air Power Company, was offered to the meeting. Mr. McLeod retiring on account of pressure of other business. H. H. Vreeland was chosen to succeed Mr. McLeod.

In his report to the stockholders, President McLeod stated that the air power cars built by the company had been in successful operation on some of the crosstown lines of the Metropolitan Railway Company's system since last July. Such slight mechanical defects as showed in the cars when first operated had been overcome, the report stated, so that now the cars had been proved a commercial success. The president stated that the work of equipping the crosstown lines of the Metropolitan system would be continued.

Application has been made at Toronto, Canada, for a charter of incorporation for the Canada Foundry Company, with a capital of \$1,000,000. The personnel of the company is composed of E. B. Osler, M.P., W. R. Brock, W. D. Matthews, Wm. Hendrie of Hamilton, Fred. Nichols, T. W. Horn and W. H. Winslow of the Chicago firm of Winslow Bros., the widely known architectural iron workers. Mr. Winslow, it is stated, will be the practical man of the company, and will superintend operations. It is the intention to establish a foundry in Toronto, and later on another in the West, probably at Vancouver. All kinds of cast iron work, including every branch of architectural work, will be turned out. Toronto papers say that in the development of Canada the iron industry has not kept pace with other lines, and large consumers like the Canadian Pacific Railway, who use a considerable quantity of casting, have been compelled to go outside in order to get their work done. The Canada Foundry Company propose by having an establishment up to date in every respect, constructed and equipped under Mr. Winslow's supervision, to be able to cater to all the requirements of Canadian consumers.

At a meeting last week of the Board of Directors of the Delaware River Iron Shipbuilding Company and Engine Works, better known as Roach's Shipyard, at Chester, Pa., John B. Roach was re-elected president and Stephen W. Roach, vice-president. Stephen W. Roach, who is the youngest son of the late John Roach, is also president of the Morgan Iron Works of New York.

W. J. Carlin Company of 514, 515 Park Row Building, N. Y., and 610, 611 Lewis Building, Pittsburgh, Pa., have just purchased the large mining and concentrating plant at Brewster, N. Y., which they are going to dismantle at once.

The California Meeting of the American Institute of Mining Engineers.

BY W. F. DOWNS E.M.

The recent meeting of the American Institute of Mining Engineers was the most elaborate and successful meeting of the society. Starting from Chicago on September 15, the itinerary covered, by way of Great Falls, Anaconda, Northern California, throughout California, Arizona, and return to Chicago, over 8000 miles. This particular meeting was undertaken at the urgent solicitation of the California Miners' Association. These gentlemen promised to show everything in California of interest to mining engineers in the most hospitable style, and they carried out their promise fully. Their preparations were elaborate and complete. Under the direction of Edward H. Benjamin, their secretary, the California Miners' Association had prepared a beautiful souvenir book entitled "California Mines and Minerals." From the introductory pages of this the following is quoted: "This work on the mining industry of California is dedicated to the members of the American Institute of Mining Engineers as a souvenir of their visit to California, September and October, 1899." A handsomely bound copy was presented to each member of the visiting party on arrival in San Francisco. It is intended that a copy of this work be sent to every member of the institute. The work is profusely illustrated with engravings and maps. The different articles in it are by men well known in their profession and district. The methods of mining as practiced, the histories of the mines, their locations and surrounding conditions are all carefully described and illustrated. There was little need of note taking with the work in hand.

It will not be attempted here in the brief space allotted to follow the itinerary exactly as it was carried out, but merely to give some of the more striking features. The first place of interest visited by the institute was the works of the Boston & Montana Company at Great Falls, Montana. Here the party arrived at 10 o'clock, and between that and 2 o'clock in the morning visited the famous concentrating works under the especial guidance of Mr. Evans; and the smelting works and electrolytic plant under the guidance of the technical staff, a lunch being served at midnight in the electrolytic refinery.

The next morning a small party of gentlemen left to visit the adjacent coal fields, the main party continuing to Butte. This most famous copper camp in the world was carefully visited and the party were royally entertained. Passing from there to Anaconda, the world famous electrolytic plants were shown in full detail and the modern metallurgy of copper was thoroughly and completely exhibited.

The next stop was at Spokane, where the hospitality of the citizens of this city surprised the visiting engineers. As the train drew into the depot, a delegation of the Chamber of Commerce met the party. The town was exhibited in Western fashion, with a brass band, and after lunch the party were wished God speed as they left the town.

A change from the original itinerary was here introduced, and it proved one of the most delightful of the whole trip. Instead of proceeding straight to Portland as was intended, the party went to The Dalles, Oregon. Here they left the train, which ran empty to Portland, and boarded the steamer of the Oregon River & Navigation Company, and spent a most delightful day in the journey down the Columbia River, joining the train at Portland again in the evening. A similar cordial reception was extended the party and the hospitality of the citizens of Portland was enjoyed as at Spokane, without the band.

The next afternoon, at Mt. Shasta, the visiting engineers were met by a large delegation of the California Miners' Association under the leadership of their genial secretary, E. H. Benjamin. From this on until the party were taken in hand by the Southern California delegation the details of arrangement and visitation were managed entirely by the California Miners' Association. Before reaching San Francisco a part of a day was spent at Keswick at the works of the Mountain Copper Company. This English company were most cordial in their greeting and entertainment of the American engineers. Under the direction of Mr. Wright, the mines, smelters, and the wonderful railway were inspected.

The following day brought the party to San Francisco, where three days were spent in meetings, discussions and visiting of places of local interest. At a formal banquet tendered the Mining Engineers, in the able address of welcome, the California Miners' Association set forth why they had been so anxious to persuade the

Mining Engineers to visit California. Beyond the general desire of showing California's mining industries and of entertaining their Eastern friends, they had "an axe to grind." They asked the help of the Mining Engineers in solving the difficult problems, local and otherwise, affecting hydraulic mining in its various forms, and the general gold mining of the State. Referring to the time when hydraulic mining was prohibited, and to the time when it was permitted under restrictions, they asked that this question of hydraulic mining be further investigated and discussed in future meetings of the institute, from the object lessons shown in this trip, claiming that a better understanding of the situation could be obtained, and perhaps some solution might be evolved which would allow hydraulic mining without injury to the agricultural interests of the State.

Following the meetings of San Francisco, before taking up the serious work connected with the exhibition of their mining industries, the party were entertained at San José, and given the opportunity of a midnight look through the great telescope at Lick Observatory.

Thence, after a glorious afternoon at the famous Del Monte Hotel and Monterey, the Entertaining Committee proceeded on the more serious work of exhibiting the mining industries and resources of the State.

The party were taken to Dutch Flat. Here at great expense and with great care arrangements had been made for an exhibition of the hydraulic work of the Little Giant. Having obtained permission of the Yuba Water Company for the use of the water for four hours, the pipes were filled, the side of the hill was shaken with heavy blasts, and when everything was ready the stream was turned on and a yawning cavern was torn into the hillside. This method of hydraulic mining was prohibited by law in 1884. A special enactment in 1892 had allowed hydraulic and placer mining to be carried on under retaining dam restrictions, but of hydraulic mining in its fullest sense, such as was exhibited to the visiting engineers on this special occasion, it was stated that only once before since 1884 had such an exhibition been given. The sight was novel and impressive, many of the Californians having never seen it before themselves. This exhibit was greatly appreciated and was recorded by a San Francisco photographer for kinometric exhibitions in the West.

Following this the new and successful systems of dredge mining of Oroville on the Feather River were exhibited. Here a very novel condition of affairs was presented. Ground which in the earlier days of placer mining had been turned over and worked to a depth of several feet, is now covered with the pioneer orange, olive and fruit groves of California. Five of these dredgers were visited and their working fully explained. The party were specially impressed with the novelty, magnitude and success of this system. Incidentally, in passing through this section the old style workings were seen. Even the Chinamen are still working the rocker.

Grass Valley, Nevada City and the Mother Lode were visited next. At Grass Valley the famous Empire Mine received and entertained the visitors. In Nevada City the Monarch also did its best to show its cordiality. At the Mother Lode, in Amador and Calaveras County, the Keystone, the Lincoln, the Kennedy, the Eureka, the Mahoning, and other famous mines of that section were visited. At the famous old Gwin mine a very notable banquet was given in the annex of their magnificent stamp mill, in which, following the banquet, twenty more new stamps were soon to be erected. We cannot leave the Mother Lode without referring to the great activity which lately seems to have been infused in mining throughout this district. Deep mining has been taken up with a new impetus, with an appreciation of modern methods and machinery which is sure to result in increased prosperity.

Here, thinking that perhaps the visiting engineers had seen enough of mines for a time, the California committee introduced a pleasure trip to the Yosemite. All preparations had been most carefully made, and though the ride was dusty the trip was taken under such conditions that every one was specially pleased. Leaving Raymond by stage the party, after stopping over night at Wiwona, entered the Yosemite the following day. Resting here over Sunday, on Monday the party left by way of the Nevada Falls, and on the journey from that valley to their special train were driven through the Mariposa Grove of big trees.

Having shown their mining operations from the rocker to the Little Giant, the California committee did not attempt further mining exhibitions, but conducted the visiting engineers to Los Angeles, where they were most royally received.

From Los Angeles the party passed to San Diego and Coronado Beach. Thence, through the fruit districts of Redlands the party left California to visit the mines of the Copper Queen Company at Bisbee, Arizona.

As the party was under the guidance of the president

of the institute, Professor Douglas, and as Professor Douglas is also president of the Copper Queen Company, as well as of the railroad running thereto, it was expected that special reception and entertainment would be here received. But here Professor Douglas was in an anomalous position. As chief of the visiting engineers, and as president of the Copper Queen, he had both to receive and entertain himself.

The staff of the Copper Queen Company were out to give their chief help in receiving the visiting engineers. The visitors were treated to a novel lunch in the mine 700 feet below the surface of the ground. The galleries were all illuminated by electric lights, and also the chamber in which the "miners' lunch" was served, the guests being notified that they would be allowed to keep their spoons as souvenirs.

Following the inspection of the mines, the smelting works of the Copper Queen were exhibited. During the afternoon a portion of the party crossed the line into Old Mexico, at the little town of Naco, returning to Bisbee in time to attend the formal banquet in the evening.

Leaving Bisbee in the night, the party headed for Flagstaff, stopping at Tucson, Phoenix and Prescott. At all of these places points of local interest were visited. From Flagstaff, from which point the engineers expected to take stages to visit the Grand Canyon of the Colorado, a little delay occurred on account of the storm which a few days before had raged severely over this section; and this raised the questions of the passability of the road, or even of the wisdom of attempting the trip to the canyon. It was readily conceded by all that nothing could be more fitting to round out this most glorious excursion than a trip to the famous canyon. During the delay, while questions of weather, accommodation, transportation, &c., were under discussion, visits were made to the cliff dwellings and cave dwellings around Flagstaff. Part of the party here left for the East, as it was decided that no one should attempt the trip into the canyon under the existing conditions except those who were physically able to resist chance exposure and cold. On Wednesday, October 18, a majority of the party started in stages to visit the famous canyon. Spending the evening at Cedar Ranch around a camp fire, and the night in the ranch wrapped in the Navajo blankets, all realized that the restrictions as to the condition of its members were wise. Again taking the stage on the following morning the party arrived in the middle of the afternoon at Tourists' Hotel. Here after watching the sunset at the brink of the canyon, all agreed that nothing of this wonderful journey could compare with its grandeur and sublimity. The next day the party divided in various ways, some visiting special points of interest on the brink, some going down Cameron Trail to the Last Chance Copper Mine, and a few, braving the hardships of the trail, descended to the Colorado River. On Saturday, October 21, a successful attempt was made to drive the 70 odd miles from Tourists' to Flagstaff in a single day. This done, the party left Flagstaff Saturday, October 21, for Chicago. The journey from Flagstaff to Chicago was unattended by any incidents of special note. This gave time for reflection and discussion of the trip, and it was fully agreed that great credit should be given to its managers as the most pretentious and successful ever undertaken by the institute. By the time some of the party would reach New York, it meant a total distance traveled of 10,300 miles. Of this over 500 miles had been by stages. Some of the party had ridden many miles on horseback up and down the various trails of the Yosemite, the Grand Canyon and other places. During this whole journey no serious mishap had occurred, and the travel and commissary arrangements had been complete. Great credit as well as thanks must also be given to the genial and able gentlemen of the various reception committees throughout the entire route for their great consideration and success in entertaining and instructing the visiting engineers.

Pittsburgh Steamship Company.—The Pittsburgh Steamship Company have been granted a charter under the laws of West Virginia, and will serve as the company under whom the Oliver Iron Mining Company, composed of the Carnegie Steel Company, Limited, and Henry W. Oliver, will operate. The fleet of iron ore carrying vessels is now being got into readiness for next season. Henry W. Oliver states that the new company represent the Carnegie-Oliver interests, and propose to establish a shipyard at some point on the lakes. It is the intention to build ore carriers for this interest.

The pine trees in the Black Hills of South Dakota are being killed off by the ravages of a little worm, and the Government is making investigations into the matter with the view of checking the evil. It is reported that 150 square miles of timber have been destroyed by the pest in the past two years.

New Publication.

MONOPOLIES AND THE PEOPLE. By Charles Whiting Baker. Third Edition. G. P. Putnam's Sons, New York. Price \$1.50.

There has just been published a third, revised and enlarged edition of Mr. Baker's work, which we have looked over with some curiosity, because it is important to know the position in times like these of men who are entitled to consideration as authorities. Mr. Baker has made so close a study of engineering matters connected with municipal improvements and plants that he must have acquired experience and views of value on monopolies of a certain character. We accept them with respect, but when he deals with the general subject of modern manufacturing and industrial organizations he enters a field in which his knowledge is obviously limited and his opinions are warped. His new edition repeats substantially the chapter on "Monopolies of Mineral Wealth," with the old story of the Secretan copper syndicate, which was not a monopoly at all, but merely a very disastrous attempt at a trading corner. His whole attempt to prove that there was then or is now a monopoly in the coal industry is a curious example of how a fixed idea may run away with a clever man's good sense.

In addition, dealing with more modern developments, Mr. Baker prints a list of large companies in the iron and steel industry. The numerous "monopolies" in this branch include the Carnegie, Federal and National companies, whom the iron trade knows as pretty lively competitors; additional monopolies, like the Cambria, Pennsylvania, Bethlehem and Park companies, which we suppose have drifted into this list because there has been a change in organization; the American Hoop & Band Company, with a capital of \$20,000,000, unknown to us; the Union Steel & Chain Company, that creature still in the womb of its organizers, and the Republic Iron & Steel Company, who are ornamented with the description "steel sheets" in brackets. Among the grinding monopolies in the machinery and hardware branches we find the E. W. Bliss Company.

In speaking of modern monopolies of mineral wealth Mr. Baker cites as an illustration that when the American Smelting & Refining Company were organized in the spring of 1899 mine owners in the Joplin, Mo., mining district formed an agreement to fix the prices for the product and prevent the smelting combination from lowering prices. The fact is that the Missouri and Kansas Zinc Miners' Association never went beyond the pleasant occupation of trying to hold prices of zinc ores and never paid any attention to the lead ore mined, which is an incidental product. We may inform Mr. Baker that the American Smelting & Refining Company do not produce a pound of zinc except by way of recovering it from silver lead zinc crust for its own use. There is no monopoly in the mining of iron ore either in the Lake Superior ranges or in other parts of this country, nor is there so wicked an organization in the copper mining industry.

There are in a number of the mining and metallurgical branches very large corporations, but no monopolies, and even a cursory study of our industrial history during recent years will teach any one who takes the trouble to look into the matter that old fashioned competition is child's play when compared with the struggles of the giants when they do come. We will go further and give Mr. Baker the hint that when conditions favor it he may witness in the future the spectacle of what competition means when concerns whom he classifies as monopolies engage in the work of taking customers from one another.

We are sorry to say that Mr. Baker has fallen into much of the claptrap based upon inadequate knowledge which characterizes much of the writing on economics in current literature.

On the occasion of the centenary of the Technical High School at Charlottenburg, the rector, Professor Riedler, being desirous of marking the event by some durable memorial, had prepared a review of the growth and development of the high-speed motor in connection with those applications with which he has been more particularly associated—namely, pumping engines, air compressors and blowing engines, the examples being selected over a very wide range both in Europe and America. This, however, has gone so far beyond the dimensions originally planned as to have developed into a volume which, under ordinary conditions, could only be sold at a price beyond the reach of many at least of the younger members of the profession, whom the author wishes especially to reach. He has therefore determined to bear the whole cost of the production himself, and to present the work to the Verein Deutscher Ingenieure, subject to the conditions that it be sold at a moderate price and that the whole of the receipts be applied to the Hilfskasse of the society. These conditions having been accepted, the work will shortly be obtainable from Julius Springer, 3 Monbi-

you platz Berlin, N., at the price of 12 marks per copy. The title is "Schnellbetrieb," and from the table of contents circulated with the notice we gather that it is a volume of 533 quarto pages, with about 1300 illustrations and diagrams and includes notices of the newer developments in the class of engines treated, including a final study of the blowing engine driven directly by blast furnace gas. As the offer is not restricted to members of the society, we reproduce the above information from our contemporary, the *Zeitschrift des Vereines Deutscher Ingenieure*, as likely to be of interest to many of our readers.

The World's Production of Pig Iron and Steel.

In the following table the American Iron & Steel Association has compiled statistics of the production of pig iron and steel in all countries in 1898, or in the most recent year for which statistics have been received. English tons of 2240 pounds are used for Great Britain, Canada, the United States, and "other countries," and metric tons of 2204 pounds for all other countries, metric tons being used as the equivalent of English tons in ascertaining the total production for all countries. The statistics of steel production for the United States, Great Britain, France, Belgium, Austria-Hungary, Sweden, Spain and Canada embrace ingots and direct castings, but for Germany and Luxemburg, Russia and Finland, and Italy complete ingot statistics are not available and the statistics for finished steel have therefore been used.

Countries.	Pig iron.			Steel.		
	Years.	Tons.	Percent- age.	Years.	Tons.	Percent- age.
United States.....	1898	11,773,934	33.02	1898	8,932,857	37.05
Great Britain.....	1898	8,609,719	24.15	1898	4,665,986	19.35
Germany and Luxem- burg.....	1898	7,232,988	20.29	1898	5,779,570	23.97
France.....	1898	2,584,427	7.11	1898	1,473,100	6.11
Belgium.....	1898	979,101	2.75	1898	653,130	2.71
Austria and Hungary.....	1897	1,308,423	3.67	1896	880,696	3.65
Russia and Finland.....	1898	2,222,469	6.23	1898	1,145,758	4.75
Sweden.....	1898	531,766	1.49	1898	265,121	1.10
Spain.....	1898	261,799	0.73	1898	213,015	0.89
Italy.....	1897	8,393	0.02	1897	63,940	0.27
Canada.....	1898	68,755	0.19	1898	21,540	0.09
Other countries (about).....	1898	125,226	0.35	1898	15,287	0.06
Totals.....		35,657,000	100.00		24,110,000	100.00

THE WEEK.

The aggregate bank clearings of the leading cities of the United States for the month of October, according to *Bradstreet's*, were \$8,270,365,000, a gain of 18 per cent. over those of September, heavier than those of October a year ago by 40.6 per cent., 47.6 larger than those of October, 1897: 94 per cent. in excess of those of October, 1894, and 51 per cent. heavier than those of October, 1892. They were larger by 7 per cent. than those of last March, the heaviest yet recorded. For the ten months of the year the clearings at 76 cities aggregate \$77,333,821,921, a gain of 41 per cent. over last year, of 68.6 per cent. over those of 1897, a total more than double those of 1894 and a sum 53 per cent. in excess of those of 1892.

United States Consul General Guenther at Frankfort writes to the State Department that during the six months ended June 30, 1899, there were 574 strikes inaugurated in Germany, affecting 2910 establishments and 89,048 employees.

The Standard Oil Company have secured a large number of leases in six counties in Southern Michigan, and, it is reported, will at once test the territory for oil. A part of the plan is a pipe line to extend to Detroit and south to a point near Toledo, Ohio.

Commercial bodies of Chattanooga, Tenn., have undertaken to raise a fund of \$10,000 to promote the location of new factories in that city by securing the services of a capable promoter to solicit the investment of outside capital.

The official report on British mines and quarries for 1898, just published, shows that the total value of all minerals produced in the United Kingdom last year exceeded \$370,000,000, being an increase of about \$25,000,000 compared with the previous year. This increase in value is largely attributable to the higher prices for coal.

The metal polishers in the Chicago chandelier factories have succeeded in the movement recently inaugurated by them to establish nine hours as the duration of a working day in place of ten.

Robert P. Porter, who has been investigating the industrial conditions in Great Britain and Continental Europe during the past eight months, arrived home on Saturday. In an interview Mr. Porter said: "Everywhere abroad I saw evidence of general prosperity, and, in my opinion, it will be no difficult matter to increase our for-

eign trade largely. While we exported manufactured goods for the fiscal year ending June 30, 1899, valued at \$336,000,000, we also kept up the pace with our food products and raw materials, and the balance of trade in our favor was most satisfactory. In 1898 the greatest discrepancy was noticed in our trade relations with Germany. While she purchased from us goods valued at \$155,000,000 she sold us only \$70,000,000 worth. This year our sales to Germany have been slightly in excess of those of 1898, while Germany's sales to us have reached \$85,000,000. The additional \$15,000,000 has somewhat improved the feeling of the Agrarians and manufacturers toward us."

Oil has been struck in Ingham and Livingstone counties, Michigan, and several wells are being sunk, with strong indications of a plentiful supply of oil at a depth of 150 feet. Options are being taken on all the land in the vicinity of the fields.

It is expected that negotiations will shortly be opened for a new treaty between Spain and the United States, all the former conventions having been annulled by the war.

United States Consul Guenther at Frankfort-on-the-Main, has arranged with the Rhine Steamboat Company to try American coal, which, he says, can be bought cheaper than the local coal.

The Auditor of the Post Office Department in his annual report shows that during the last fiscal year the number of post offices in the United States increased from 72,976 to 74,384; the number of domestic money orders issued increased from 27,798,078, representing \$401,113,717, to 29,007,870, representing \$442,483,354, a net increase in number of 1,209,792, and in volume of \$41,369,636. During the year the revenues of the postal service increased from \$89,012,618 to \$95,021,384, and the expenditures from \$97,853,407 to \$101,632,160, a net increase in the receipts of \$6,008,765, and in expenditures of \$3,778,752.

The British Board of Trade returns for the ten months ended October 31, 1899, show that the value of exports from the United Kingdom increased \$122,198,400, and the imports increased \$81,052,800.

Work has been begun at Hartford, Conn. on an automobile which is intended to tow canal boats on the Erie Canal. It will be powerful enough to haul from six to ten boats at once, and will cost about \$4000.

A National Association of Tube Workers is being formed under the auspices of the American Federation of Labor, to which it will be affiliated. The first local organization was completed this week at the Youngstown plant of the National Tube Company.

The syndicate of Vera Cruz merchants who, it was reported, had purchased the Spanish floating dry dock at Havana, having declined to complete the purchase, the Spanish Government has decided to tow the dock to Spain. The dock was offered three times for sale by auction unsuccessfully.

A Russian agent is reported to be in this country trying to secure the services of expert steel workers, who are in great demand for the large new steel enterprises in the Czar's dominions.

As a result of the recent strike at the Cramp shipyards in Philadelphia, the company, it is said, have decided upon the adoption of pneumatic tools throughout their yards and shops. Contracts have been awarded to the Chicago Pneumatic Tool Company for a large equipment of riveters, hammers, drills and other tools driven by compressed air.

Fourteen shops belonging to the Sheet Metal Manufacturers' Association in Chicago, on Saturday, locked out their employees, 400 in number. The action was taken in support of a member of the association against whom a strike had been ordered.

President James J. Hill of the Great Northern Railroad is credited with the contemplation of a vast system of transit that will stretch from London to Hong Kong. Mr. Hill has just returned from a trip to England, where he went to further his plans and where he left contracts for the construction of a fleet of fine Transatlantic steamers, which are to be ready for service by April. These vessels, according to the general report, are to run from London to New York, where they will connect with the Baltimore & Ohio road, of which Mr. Hill has gained the control, thus completing the last link in a great chain of railway and steamship lines. These include the Baltimore & Ohio from New York to Chicago, the Wisconsin Central Railroad between Chicago and St. Paul, the Great Northern from St. Paul to Seattle, and the Japan Mail Steamship Company from Seattle to Yokohama, Hong Kong and Manila.

The Iron Age

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DAVID WILLIAMS COMPANY,	- - - - -	PUBLISHERS.
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GEO. W. COPE,	- - - - -	ASSOCIATE EDITOR, CHICAGO.
RICHARD R. WILLIAMS,	- - - - -	HARDWARE EDITOR.
JOHN S. KING,	- - - - -	BUSINESS MANAGER.

Relieving the Money Market.

The recurrence of periods of monetary stringency, more severe in some years than in others, cannot be obviated by a permanent increase in the volume of the currency. A permanent increase in the supply of gold cannot be relied on, because the amount of gold here will depend, not only upon the total supply, but on the condition and the currents of the world's trade. A paper inflation has a tendency to drive gold out, because if there is an excess of currency the gold is the only part that can go elsewhere. The paper could not be increased beyond a certain point without depreciation. If it stopped short of that there would still be a tendency to use all the money there was. An increase of prices or an increase of speculation would absorb the supplies of currency. Then when the need was a little greater than the average the complaint would be made again that the money market was tight.

The fact is that the world's commerce is carried on very much like that of an individual who does not keep in his money drawer more money than he generally needs, depending upon borrowing when his needs are above the ordinary. Where a great many men want money at the same time the additional supply is likely to come from another country; just now the money is in active demand in the other countries also, and until the money that has been sent from here to the West and South comes back there is likely to be a deficient supply of currency, possibly relieved by shipments from Europe, according to the relative demands for money on this side of the ocean and the other.

There has been here and abroad an immense amount of speculation, and this has called for the great supplies of money, because in great measure it has taken the form of the sale of manufacturing plant to the public. Thus the capital invested in industrial concerns has greatly increased. Supplementary to this large quantities of stocks are being carried speculatively because with prices advancing there is a general expectation of a profit. The payment to the farmers for a great part of their crops and some additional demand for money by England in preparation for the Transvaal war have contributed to increase materially the demand for money.

But the unusual demand is temporary. It is due to a large amount of buying at a given moment. There is also selling. There are Governmental disbursements. The farmer who gets money for his wheat and corn buys manufactured goods with a part of it and the rest he deposits in his bank, which sends a part of it back to New York. If the banks were permitted on terms advantageous to themselves to issue more currency at a time like this, which currency should promptly return to them for redemption as the need of it passed away the relief would be very great. Other methods of relieving the stringency threaten more harm than good. There is currency enough were the circulation of it rapid enough, for none of it is destroyed in the using, and \$1 may effect purchases of \$100 worth. But just at the moment when everybody desires to use a good deal of money a temporary expansion ought to be practicable.

The Chicago Labor Troubles.

Workingmen and employers throughout the country are interested in the impending struggle in the Chicago building trades. This matter was referred to editorially last week, and in another part of this issue some facts are presented concerning the restrictions recently placed on labor by the Chicago trades unions which have precipitated an acute state of affairs, promising important developments. That city, metaphorically speaking, has been the paradise of trades unions. The interests of organized labor have been recognized politically, and the power of the unions has been steadily growing, until the leaders have permitted their reason to become warped by their continuous successes. Feeling that they practically own the city, they have not only made the most arbitrary regulations as to how a man shall work and what he shall do in a day, but they propose to regulate the disposition of the police force. A movement is on foot to forbid by city ordinance the use of the police in protecting non-union men at work on a "struck job." It is improbable that such an ordinance will be enacted, but the proposition shows the spirit animating the Chicago labor leaders.

Unless a policy of conciliation is speedily resolved upon by the unions in the building trades a most aggressive campaign against them is promised by the builders, contractors and allied interests. They assert that no new work will be undertaken after January 1, but that a period of idleness in this line will then be inaugurated, to continue until satisfactory terms are secured. Thus, in one of the largest cities of the country, in which ordinarily vast quantities of materials are consumed in erecting buildings, a closed market is to be expected for an indefinite period. A stubborn contest appears likely, as the labor leaders and walking delegates have the confidence begotten by a long exercise of practically unlimited power.

Another phase of the contest promises to be quite interesting. The employers propose to invoke the power of the anti-trust laws of Illinois to break down the restrictions placed upon labor by the rules of the unions. These rules, promulgated by associations, so clearly diminish the amount of work turned out by the individual members that they are thus brought under the purview of the act of 1891, the language of which is of the most sweeping character relative to combinations of any kind. If the objects to be accomplished by a trades union should be declared illegal in the State of Illinois the labor leaders would only have themselves to blame for their folly in grasping for too great a control of the building trades. The attitude of the Supreme Court of that State in respect to combinations of manufacturers and merchants has been plainly stated in several decisions, but a case involving a labor combination would be a novelty. The labor leaders will probably endeavor to prevent the adjudication of this question, as an adverse decision might seriously affect their power.

The manufacturing interests of Chicago are seriously disturbed by the labor situation. The troubles in the building trades affect many of them directly and others indirectly. This not only pertains to the sale of materials used in building construction, but to the operations of factories. Employees in factories are becoming more exacting, demand shorter hours, and endeavor to limit a day's output in imitation of what their *confrères* are doing in the building trades. This threatens to cause the early removal of a number of large manufacturing establishments to small towns or to the country if a change is not perceived in the policy of the workingmen.

The Industrial Preferred Stocks.

The position of the preferred issues of the industrial corporations is attracting a good deal of attention and seems to be quite widely misunderstood. In the case of the majority of the iron and steel stocks the preference issues are cumulative, as to dividends, and are not subject to prior fixed charges in the form of interest on a bonded indebtedness. They represent more or less closely the replacement cost of plants and property, although some of them are apparently capitalized at a rate which would absorb the profits on the full earning capacity in ordinary times. Every one of them should stand on its own merits, with a clear understanding of the risks involved in the extraordinary powers granted by the charters of some of the companies to their directors. The organization of some of the companies protects the holders of preferred and common stock against the creation of prior liens by making the placing of any mortgage upon the property subject to the approval by a majority vote of the holders of both classes of stock. The charters of some of the industrials also give preference to the assets, on liquidation, to the holders of the preferred stocks.

So far as the steel stocks are concerned, it is worth noting that a goodly share of the large profits now being earned has gone into the acquisition of new property, thus strengthening the position of the preferred issues. On the other hand, it must be observed that some of the companies still have in their treasuries more or less considerable reserve holdings of preferred stock which may be marketed at any time.

All these facts must be taken into consideration when considering the investment value of the industrial preferred stocks. All of them are new to the general public, and must prove their value by steady dividends and by good returns on the common stocks. At present prices they are netting from $7\frac{1}{4}$ to 10 per cent, while similar issues of older industrial concerns are selling at 115 to 125. Generally speaking, the original owners of individual plants which have been absorbed by consolidations appear to have retained a large share of the preferred stocks issued to them. The sales on the exchanges of preferred stocks are much smaller than those of the corresponding common issues, and the fluctuations in prices are within a much narrower range. The distribution seems to be a slower process, but the absorption for permanent investment is apparently going on steadily.

Export Trade.

The export question is a difficult one to handle to suit everybody concerned. Manufacturers who have built up an export trade are urged by business men who are thinking ahead to keep up their foreign connections by all means, even at the sacrifice of some profit. The present heavy domestic demand is regarded as a temporary matter, liable to severe shrinkage at any time, in which event foreign outlets will prove a good thing for the country at large as well as for the branches of trade directly affected. With many manufacturers, fortunately, foreign prices are so high or domestic prices have advanced so moderately that their foreign business continues on about the same basis as their home trade. But in some lines the difference between domestic and export prices is quite a figure and perhaps at the same time manufacturers are much in arrears on deliveries. Here difficulties are encountered in the endeavor to keep up an export trade for the benefit of the future. If an ex-

port price becomes known, the manufacturer making it is liable to severe criticism from his domestic customers for charging them so much more than he is willing to take on foreign business. If a rush order for export is accepted and filled while domestic consumers are standing in line at the factory door and begging for goods, they feel that they have been unfairly treated and discriminated against. In such cases domestic consumers should exercise the virtues of forbearance and unselfishness and take a more liberal view of the situation than their own interests would dictate. It is a wise policy to keep up foreign connections if at all possible, while domestic prices depend entirely on supply and demand. The demand has for some time been exceeding the supply and therefore domestic prices have risen. But no matter where domestic prices may be from this time forth, whether at a high or a low point, the manufacturers who will persistently cultivate an export trade are to be commended and not criticised.

CORRESPONDENCE.

Basic Lined Gas Furnaces for Malleable Casting Manufacture.

To the Editor: In E. C. Wheeler's excellent article on the "Physical Characteristics of Malleable Cast Iron" I notice he refers to the use of a basic lined furnace for refining the iron and states that the time is now ripe for some such improvement in this branch of the iron trade. It may interest him and possibly other malleable iron casting manufacturers to know what has already been tried in this line.

In 1891 the writer put a basic lining in the air furnace of the Chattanooga Malleable Iron Works and ran it for some time. This was done so that Southern coke irons, which contained too much silicon and phosphorus for the ordinary acid hearth, could be used. Excellent malleable iron castings were obtained, but the fact was developed that the ordinary air furnace was not suitable for a basic lining made of shrunk dolomite, if it was to be chilled off every day after tapping.

The metal changed and became refined more rapidly on the basic than on the acid hearth. In fact, with heats of 8 or 10 tons run through a small tap hole and caught in hand ladles, as now practiced, the last half of the metal would be refined too much and become too sluggish to pour the castings successfully. This difficulty was encountered with 6 tons of metal and led the writer to suggest that steel works practice be adopted, so that the metal could be tapped rapidly through a large hole into a ladle. This was done and the metal was successfully repoured from the storage ladle into the small hand ladles and from them into the molds.

A few years later a basic lining was put into Stanley G. Flagg's foundry in Philadelphia, and the experiment tried here again indicated that it would be necessary to abandon the present system of hand ladles used in emptying the furnace and substitute a large ladle, so that the metal could be run from the furnace rapidly. It is possible that with the basic material now available better results (as regards the wearing of the hearth) may be obtained with the present crude and extravagant form of furnace, but in the writer's opinion a gas furnace with air regeneration will prove to be a great economy, although much more expensive to build.

If large malleable iron casting manufacturers desire to reduce the cost of their present method and are not afraid of the necessary capital expenditure they have only to consult the people interested and study the process now used in a large basic steel works to find out that a process and furnace is already developed which is eminently suitable for their trade. This process is a continuous one and requires a tilting furnace to obtain the best results. Liquid metal is also required if a large output is desired from one furnace, so that in the absence of suitable liquid blast furnace metal a cupola would be necessary to melt the pig iron. The method of operation is as follows: A tilting furnace of about 15 tons capacity when filled would be installed. In this furnace a heat of 10 tons would be refined to the desired point necessary to make the castings. Instead of pouring this out into the ladle 5 tons—preferably of liquid metal—would be added to the refined liquid metal in the bath. The silicon in the added metal ought to be at least twice as much as in the refined metal in the bath. The result would be that the impurities in the 5 tons would be immediately reduced by mixture alone, and the action of the oxide of iron in the slag would rapidly bring the silicon and carbon of the entire

bath down again to the point required for good castings. As soon as this condition was obtained the furnace would be tilted and 5 tons poured out and the operation just described again repeated. Slag would be flowed away from the furnace through the slag spout as often as desired and slag forming additions would be added when necessary.

A furnace working under such conditions, if charged with liquid metal instead of solid, would make 5 tons of refined metal in about one hour. It could be purified in much less time, but the question of the necessary degree of fluidity must be considered and can only be ascertained by actual practice. If the added liquid metal contained considerable silicon it would add heat to the bath by its oxidation. This would mean an output of some 35 to 40 tons of refined metal in a shift and would necessitate continual pouring into the molds all through the day. The furnace would also have to be kept hot and charged with solid stock during the night, so that the bath would be ready to receive the liquid metal for the next day's work. A furnace of larger or smaller capacity would of course increase or decrease the output in the same ratio.

I notice that it is suggested in Mr. Wheeler's article that any class of pig iron could be used with the basic lining, even if it contained 2 per cent. phosphorus. I am afraid that this is an erroneous conclusion, as my experience with the basic process proves that such metal could not be used to any extent in the mixture for malleable casting purposes. Iron containing 2 per cent. phosphorus is used in the basic open hearth steel process, but the phosphorus is only entirely eliminated where the metal has passed the refined cast iron stage and become steel. Phosphorus and carbon are expelled together in a basic furnace when covered with a suitable liquid basic slag.

A basic lining will enlarge the sources of supply of pig iron for the malleable casting trade, as the phosphorus and sulphur can be reduced, which is exactly the opposite to what is occurring in the present practice. In other words, phosphorus constantly increases in the acid hearth from the waste of iron due to remelting and oxidation from the air blast. This is rectified by using pig iron containing less phosphorus than the sprues and defective castings remelted.

The writer believes that the value of the basic lining to the malleable casting trade will be in the use of coke irons of more or less irregular silicon contents and with less than 0.30 phosphorus and doing away with charcoal iron entirely, unless this competes with the other in price.

Whatever the future may bring forth, Mr. Wheeler will be found to be correct in his advocacy of a basic lined gas furnace as being the next step forward in his trade.

BENJ. TALBOT.

PENCOYD, PA., November 13, 1899.

Early Iron Making in Ohio.

To the Editor: The present manufacturers of iron can hardly realize that in 1835 what is now Lake County, Ohio, furnished all the pig iron consumed at Buffalo, Detroit and the villages on Lake Erie. There were four blast furnaces, one each at Painesville, Perry, Concord and Madison. The iron was made from bog ore found at the foot of the ridge along the lake shore between Painesville and the Ashtabula County line. The daily output of each furnace was about 4 tons. The principal stockholders of the Geauga furnace were Robt. Blair, Chas. T. Paine, P. P. Sanford and Mr. Wood. In the Concord furnace the proprietors were Timothy Rockwell, Homer Higley, Jonathan Stickney. The proprietors of the Railroad furnace at Perry were Isaac Gillet, Uri Seeley, L. M. Parsons and Lewis Morley (uncle of Morley Brothers, Saginaw, Mich.). In the Arcole furnace the proprietors were Judge Wilkinson and both of his sons, John and Samuel, and Uri Seeley. Mr. Wilkes, now living in Painesville, Ohio, was connected with this furnace. He with the Wilkinsons went to Lowell, now near Youngstown, and erected the first furnace in the United States using bituminous coal in the making of pig iron.

When one stops to think that in 1835 the production of pig iron in Ohio was only 40 tons per day and compares it with the enormous output of to day he will see what an enormous increase has been made in 64 years.

MORLEY BROTHERS.

SAGINAW, MICH., October 31, 1899.

The Sloss-Sheffield Steel & Iron Company.

The Sloss Sheffield consolidation is now an established fact. The properties to be controlled by the new company are the Sloss Iron & Steel Company of Birmingham, Ala.; the Philadelphia Furnace of Florence, Ala.; the Ensley Furnace properties of Sheffield, Ala.; the Gulf Coal & Coke Company property, the Brown ore properties of West Point, Tenn., and Russellville, Ala. The Corona Coal & Coke Company property may also be acquired.

The company are to have an authorized capital stock

of \$10,000,000 7 per cent. non cumulative preferred stock and \$10,000,000 common, of which \$6,700,000 preferred stock and \$7,500,000 common stock will be issued for the acquisition of plants and properties, repairs, opening new mines, new washing plants, new coke ovens, working capital, expenses of organization, and other cash requirements. The balance of the capital stock of the new company—namely, \$3,300,000 preferred stock and \$2,500,000 common stock—will be reserved for the erection of a steel plant and working capital, and for the general purposes of the company.

The existing bonded indebtedness of the Sloss Iron & Steel Company is as follows: Six per cent. bonds, \$2,000,000; 4½ per cent. bonds, \$1,835,000; and the properties of that company will be acquired by the new company subject to this indebtedness.

For the purpose of providing funds for carrying out the plan it is proposed to sell for \$2,200,000 in cash \$2,200,000 preferred stock and \$2,200,000 common stock at par.

The prospectus also says that when certain of the properties to be acquired are put in active operation it is estimated that the output of pig iron will be increased 150,000 tons per annum, which, at \$5.50 per ton profit—the profit now made by the Sloss Iron & Steel Company, which turns out 210,000 tons of pig iron annually—would increase the annual earnings \$825,000. Of the cash to be provided by the plan, \$962,000 will be available for betterments, improvements and working capital.

A description of the combined properties is given in the prospectus, as follows:

"Sloss Iron & Steel Company.—This includes \$400,000 working capital and four furnaces, with a capacity of 200 tons per day each. In addition there are 30,000 acres of ore lands, including the Red Mountain vein of from 12 to 15 feet in thickness, developed at two points; 15,000 acres of coal lands fully developed, with 13 openings, and a capacity of 5000 tons per day; 6000 acres of coal lands at Bessemer, Ala., undeveloped; 1000 coke ovens, 775 dwelling houses, 26 stores, warehouses and office buildings, and a dolomite quarry, fully developed.

"Philadelphia Furnace.—One furnace at Florence, Ala., with a capacity of 200 tons per day.

"Ensley Furnaces.—Two furnaces at Sheffield, Ala., with a capacity of 200 tons per day each. Also a contract for the purchase of 14,000 acres of coal lands, with 200 coke ovens, and 13,000 acres of ore bearing lands, limestone quarries, and other property, all of which coal and ore lands and coke ovens are now the subject of litigation.

"Gulf Coal & Coke Company.—This property consists of about 25,000 acres, containing the Pratt seam of coking coal, about 4 feet in thickness, as well as a seam of coal known as 'Horse Creek' seam, about 8 feet in thickness. This property has been purchased from time to time from small holdings, covering a period of over 12 years, and is situated a few miles from the junction of the Northern Alabama Railroad with the Southern Railway. This property is easy of development, since both seams of the coal are above drainage level, and the extension of the road from Paris Junction, Ala., to a point about 7 miles south would furnish sufficient railroad frontage to easily put the property to a capacity of 5000 tons per day within a reasonable time.

"Corona Coal & Coke Company (if acquired to be by means of the issue of so much as may be necessary of the \$3,300,000 of preferred and \$2,500,000 of common stock reserved).—This property is situated on the line of the Southern Railway, 70 miles west of the Birmingham district. The coal is hard coal, especially adapted for shipping. This property consists of about 16,000 acres, developed to a capacity of about 1200 tons per day; six openings and a full equipment of miners' houses, commissary and main equipment.

"Brown Ores.—Brown Ore is at West Point, Tenn., on the Louisville & Nashville Railroad, 29 miles north of Sheffield, containing 20,000,000 tons of ore, yielding 50 per cent. metallic iron. It is now being worked regularly to supply Sheffield furnaces. Also a property at Russellville, Ala., on the line of the Northern Alabama Railroad (Southern), located 21 miles south of Sheffield, with 5000 acres of brown ore lands, partially developed, yielding 50 per cent. metallic iron when well washed. The quantity of brown ore that can be mined from the Russellville district is not known, but it is estimated by various experts to be as much as 50,000,000 tons. This ore is also being used now at the Sheffield furnaces."

A recapitulation shows that the Sloss-Sheffield Steel & Iron Company will have, aside from the Ensley coal and ore lands and coke ovens, seven blast furnaces, with 1400 tons capacity a day; 1500 coke ovens, 62,000 acres of coal lands, 31,500 acres of brown and red ore lands, carbonate and dolomitic limestone quarries, 1200 tenement houses, and 31 stores, warehouses and office buildings.

The prospectus is signed by Edmund W. Rucker, John C. Mahen, Joseph Bryan, Richard Mortimer, W. H. Goadby and John A. Rutherford.

The New East River Bridge.

Specifications for Steel Cables, Suspenders, Coverings, Sheaves, Bands and Their Appurtenances.

Proposals will be received by the Commissioners of the New East River Bridge, at their office, 49 Chambers street, New York, until 2 o'clock on the afternoon of December 7, for furnishing the materials and constructing the steel cables, suspenders, cable bands, coverings, sheaves and their appurtenances of the new bridge.

been completed. The temporary wire bands will then be removed and the whole 10,397 wires will be firmly clamped into a cylindrical cable, by the main bands of cast steel which carry the suspenders for the support of the floor beams. In the intervals between the main bands there will also be permanent wire bands as specified below. When all the permanent bands are in place the cables will be covered with steel plates overlapping so as to shed water.

Method of Erection.

Each cable strand will be built several feet higher, or with a smaller versed sine, than its final position in the cable. This will be accomplished by placing the shoe at one end of the strand several feet back of its final posi-

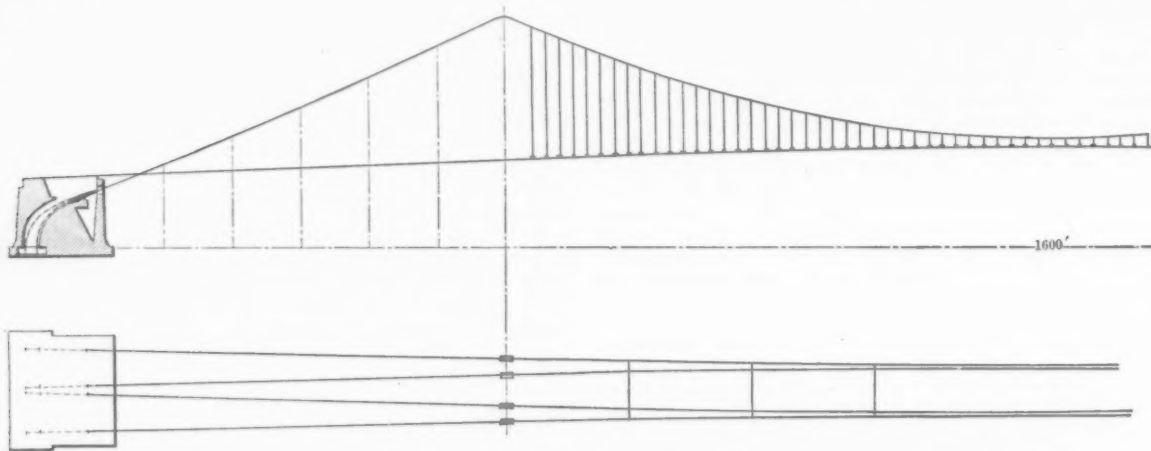


Fig. 1.—Half Side Elevation and Plan.

Official form of notice, proposal, bond, contract and specifications, together with general and detail drawings for the work, may be obtained at the office of the chief engineer, 84 Broadway, Brooklyn.

The contract is to be completed within ten months after the cable saddles are set in place upon the steel towers of the bridge. Each bidder will be required to deposit with his proposal a certified check for \$12,000 as security for the execution by him of the contract, and the contractor to whom the work is awarded will be required to give a bond in the sum of \$400,000. The work will consist of the construction and erection, complete in place, of four steel wire cables, and the suspenders therefrom and all appurtenances thereto on the anchorages and over the steel towers now being erected. Bids will be based upon the whole work, and no part of the work shall be sublet without the consent of the Commissioners.

Comment has been made upon the fact that only ten months are allowed for the completion of the entire

tion. Then when the strand is finished the shoe will be placed on the permanent pin and the strand will be adjusted to its proper versed sine. When all the wires of a strand have been laid and before the shoe is placed in its final position on the pin the strand will be banded to keep the wires in place. The bands will be composed of five or six turns of No. 10 steel wire, securely locked, and will be placed at intervals of not more than 5 feet. For the ends of the strands within the anchorages these bands will be permanent, and must be placed not more than 2 feet apart.

Assembling of Strands.—When all the strands for a cable are complete the temporary wire bands will be removed therefrom; all the wires of the cable will be brought together, compactly, into cylindrical form; and the main cable bands will be put on and screwed up so as to grip the cable tightly. The main bands will be spaced at intervals of about 20 feet, measured horizontally. Intermediate bands, composed of eight turns of No. 8 steel wire, securely locked at the ends, will be

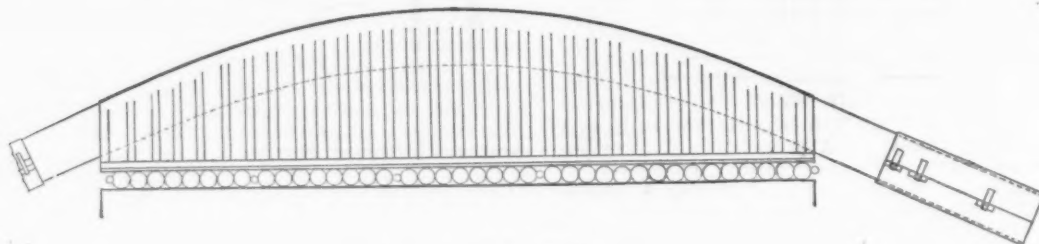


Fig. 2.—Saddle.

THE NEW EAST RIVER BRIDGE.

work. We learn in this connection that the engineer will insist upon the construction of the four cables simultaneously.

It is estimated that this material will aggregate about 5000 tons.

The total length of the outer cable from center of end pin of one anchor chain to center of end pin of other anchor chain at mean temperature, without superstructure, will be about 2935 feet.

Description.

The cables will be four in number, extending from anchorage to anchorage over the saddles at the tops of the steel towers. Each cable will be made of No. 8 steel wire, in 37 strands, each strand containing 281 wires laid straight. Each strand will be held together by temporary bands of wire until all the strands of a cable have

spaced at intervals of about 4 feet between the main bands.

Steel Covering.—When completed the cables will be covered with steel plates 1-16 inch thick, extending from main band to main band, and overlapping at the joints so as to shed water and keep the cable wires dry.

Suspenders.—The suspenders, with their sheaves and fittings, will be put in place on the cable bands when the cables have been completed.

Support of Cables.—During erection the saddles will be placed about 6 1/4 inches back of their mean position on the saddle beds; and the cables between the main towers and the anchorages must be supported at the elevations which they will assume at mean temperatures when the total dead load of the bridge is suspended from their main spans. The lower portions of each cable will be supported in their proper permanent positions at points

near the cable clamps within the anchorage; and, as each of the strands of the upper portions of the cables is lowered into permanent position, it must be pressed down and held to its place at these points in adjusting to position.

Materials and Workmanship.

Steel for Wire.—All steel for wire shall be made in an open hearth furnace lined with silica. This steel shall be made entirely from pig iron, without the admixture of scrap of any kind or form, and without the use of any other stock. No portion of the pig iron used shall contain more than 0.06 of 1 per cent. of phosphorus nor more than 0.05 of 1 per cent. of sulphur. The use of iron ore for the reduction of carbon in the furnace charge will be allowed according to usual and good practice. The recarbonization of steel and the addition of manganese shall be accomplished by the use of ferromanganese or spiegeleisen only, and shall be performed carefully in a manner most likely to give good results. During the reduction of the steel in the open hearth

Steel for Castings.—Steel for castings shall be made in an open hearth furnace lined with silica. At least one-third of all stock used for steel castings shall be pig iron; and, where scrap is used, it shall be of a satisfactory kind and quality. During the reduction of the steel in the furnace it shall not be decarbonized below 0.10 of 1 per cent. In making steel for castings the use of iron ore, ferrosilicon, ferromanganese and spiegeleisen will be allowed according to usual and good practice.

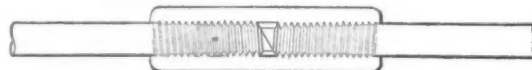


Fig. 3.—Wire Splice, Full Size.

The finished steel shall not contain to exceed the following limits of the elements named:

Phosphorus.....	0.06 of 1 per cent.
Sulphur.....	0.04 of 1 per cent.
Manganese.....	0.80 of 1 per cent.
Silicon.....	0.35 of 1 per cent.

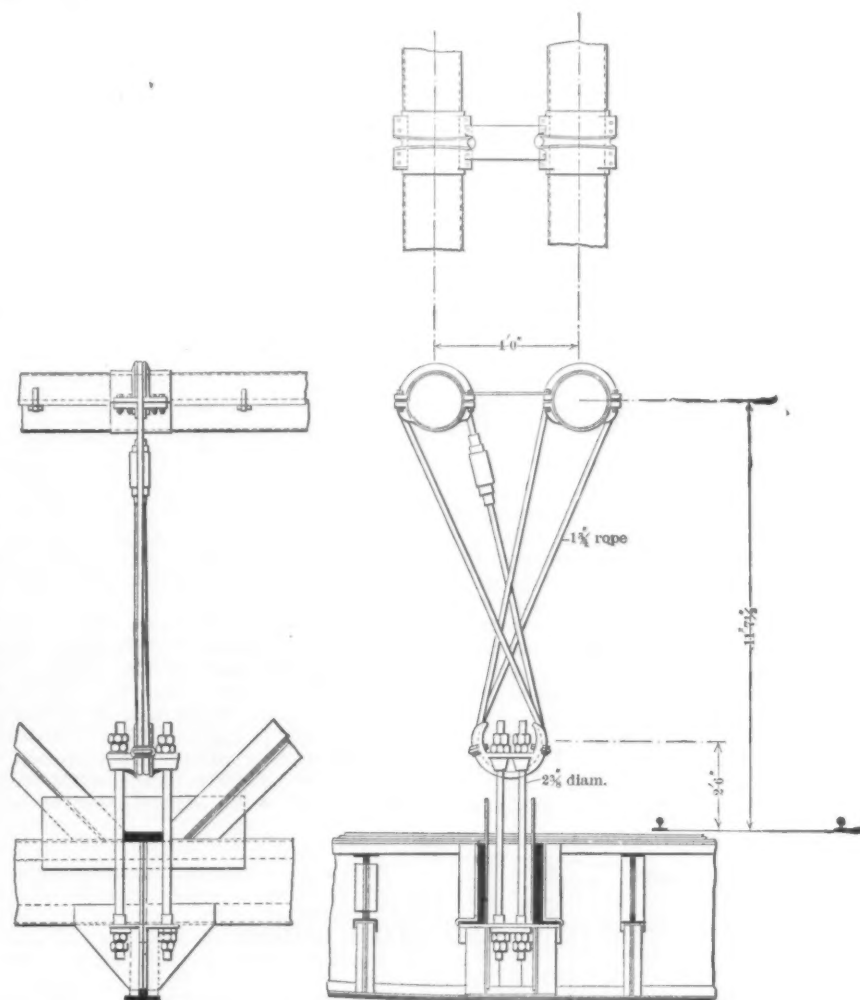


Fig. 4.—Sections at Center of Span.

THE NEW EAST RIVER BRIDGE.

furnace, it shall not be decarbonized below 0.10 of 1 per cent.

The finished steel shall not contain to exceed the following limits of the elements named:

Phosphorus.....	0.04 of 1 per cent
Sulphur.....	0.03 of 1 per cent
Manganese.....	0.50 of 1 per cent
Silicon.....	0.10 of 1 per cent
Copper.....	0.02 of 1 per cent

The finished steel shall be made into bottom cast ingots, not larger than 16 inches square in greatest cross section, weighing not more than 5000 pounds each, and cast in groups of not less than six ingots to each group. The steel shall be run slowly and continuously, in order that the ingot molds may fill gradually at as low a temperature as practicable. All portions of ingots containing bubbles shall be cut out, and sand shall not be thrown in the top of the ingot molds after they have been filled. The engineer reserves the right to take drillings from the finished steel, for check analysis, and the same must not show an increase over the specified limits for phosphorus or sulphur of more than 25 per cent.

All steel castings shall be carefully and thoroughly annealed.

Test pieces taken from coupons on the annealed castings shall show an ultimate strength of not less than 60,000 pounds per square inch, an elongation of not less than 20 per cent. in 2 inches, and shall bend 90 degrees around three times their thickness without rupture. All steel castings must be true to the drawings, with smooth surfaces, and all re-entrant angles must be neatly filleted. They must be planed smooth and true where the drawings require, and all holes for bolts must be drilled accurately. The main bands and suspender sheaves must have the grooves, in which the suspenders are to rest, chipped and filed sufficiently to remove all irregularities and to leave them smooth and true, so as to afford a satisfactory bearing for the suspenders. They must have their end surfaces trued up in the same manner, in order to afford a smooth and uniform support for the cover plates.

Bolts, Nuts and Cover Plates.—The methods of manufacture and the chemical requirements of the steel for all bolts, bolt ends, nuts and cover plates will be the

same as those of the steel for wire. It must have the following physical requirements:

Maximum ultimate strength, 68,000 pounds per square inch.

Minimum ultimate strength, 60,000 pounds per square inch.

Maximum elastic limit, 35,000 pounds per square inch.

Minimum percentage of elongation in 8 inches, 20 per cent.

All bolts will be turned and machined and must have the threads true and carefully made. All screw threads shall be of the United States standard. Their threads must be full and true and fit neatly.

Strength and Elongation of Wire.—The wire for the cables and for the suspenders and ties must have an ultimate strength of 200,000 pounds or more to the square inch, and must have an elongation under test of at least 2½ per cent. in 5 feet of observed length and of at least 5 per cent in 8 inches of observed length. It must be capable of being coiled around a rod of its own diameter without cracking. All wire will be bright and, for the cables, it will be of size No. 8, Birmingham wire gauge, not straightened by machine, but drawn absolutely straight and free from any tendency to coil when un-

much cable shield as they will hold. After the main cable bands are in place the outside of the cable will be coated with the cable shield. During their manufacture the suspenders will be filled with as much cable shield as they will hold. Before leaving the shops the main bands and the cover plates will receive, inside and out, two coats of durable metal coating, to be approved by the engineer. After the suspenders are in place, and after the erection of the suspended structure has begun, the suspenders will receive two thorough coats of durable metal coating, to be approved by the engineer. When the cables and suspenders are fully completed the main bands, cover plates, suspenders and all the connections will receive two coats of white paint, to be approved by the engineer.

The accompanying engravings show main details of design, half side elevation and plan. Estimates as to the cost of this work place the figure as upward of \$1,000,000.

It is expected that specifications will be ready about January 1 next for construction of and furnishing materials for the main span of the bridge. This will be the next stage of the work to be taken up. Following this the steel viaduct approaches will be contracted for.

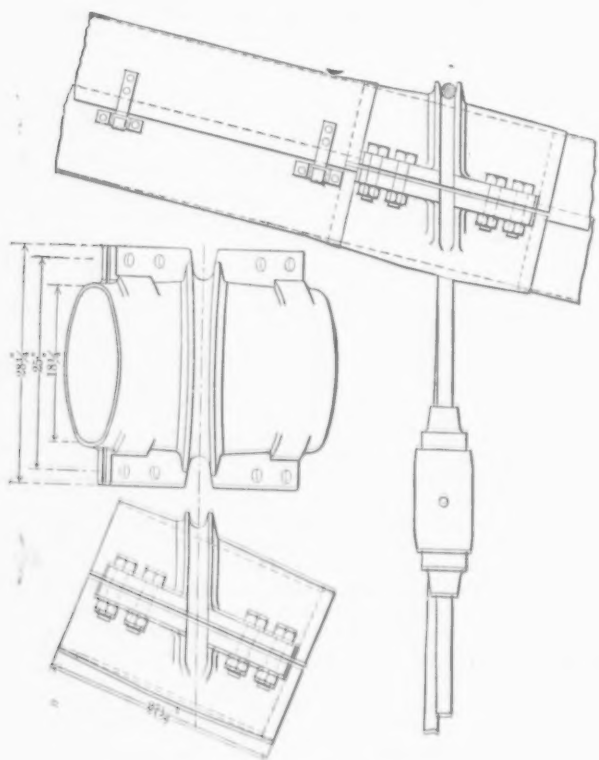


Fig. 5.—One of the Cable Bands.

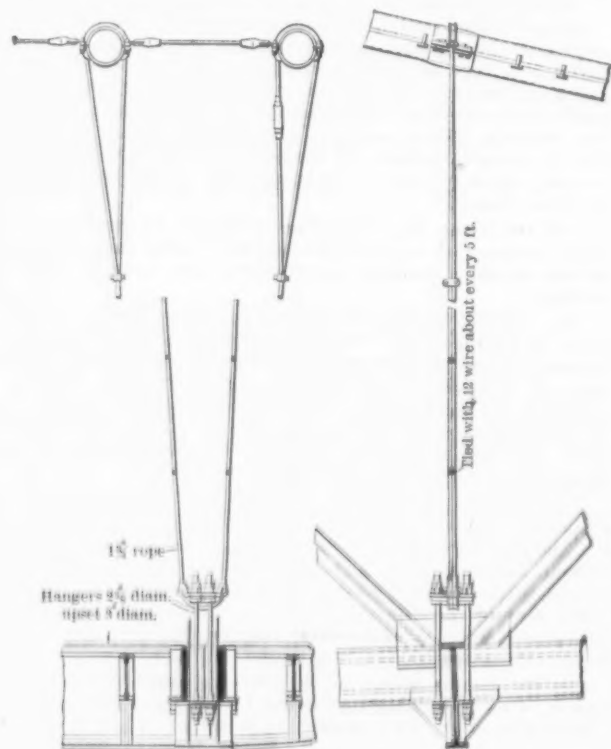


Fig. 6.—Suspender System.

THE NEW EAST RIVER BRIDGE.

rolled from the drums. It shall be made in lengths of not less than 4000 feet. All the wires of each cable strand will be spliced so as to form one continuous wire. The splices must be made so as to have a strength of at least 95 per cent. of the strength of the wire. The splice which will accomplish this result with the least increase in size above that of the wire will be approved by the engineer. The right and left sleeve nut splice, shown on the drawings and used for the cables of the New York and Brooklyn Bridge, is the only one known to the engineer which will give the required strength. The lengths of the wires must be arranged so that the splices will be uniformly distributed throughout the cables. The suspenders will be made of seven-strand (wire core) steel wire rope 1¾ inches in diameter. The two ends of each suspender will have socketed screw ends, one with a right hand and the other with a left hand thread; and these screw ends will be joined by a sleeve nut, as shown on the drawings. The suspenders and ties must be laid or cut off under a stress of not less than 10 per cent, nor more than 15 per cent. of their ultimate strength.

Protection from Oxidation.—As soon as the wires are made they will be coated by immersion in boiling linseed oil. Each of the cable strands will, while it is being banded with the temporary bands, be filled with as much cable shield, to be approved by the engineer, as it will hold. Before the main cable bands are put on the interstices of the cables will also be thoroughly filled with as

L. L. Buck is chief engineer of the commission and O. F. Nichols is chief assistant engineer.

The Union Steel Company.

PITTSBURGH, PA., November 15, 1899.—(By Telegraph.)—The Union Steel Company of Pittsburgh have been chartered with a capital of \$1,000,000. The ultimate capitalization will be much larger than this, although the exact amount is not known. This concern will locate their plant in the Monongahela Valley in the Pittsburgh district, the site having been practically decided upon. They will erect a blast furnace of about 600 tons capacity, a basic open hearth plant of about 1000 tons daily capacity, a rod mill and wire mill. The contract for the engines has already been placed with Southward Foundry & Machine Company of Philadelphia and the E. P. Allis Company of Milwaukee. The contract for the rod mill, which will be a Garrett double mill with a daily capacity of 600 tons, has been placed with the Frank-Kneeland Machine Company of Pittsburgh. The contract for the rod mill building has been given to the Shiffler Bridge Company of Pittsburgh. The other contracts for the furnishing of the equipment of this concern will be placed before long and active building operations will be commenced next spring.

Information Wanted.—Who manufactures machinery for making broom handles?

MANUFACTURING.

Iron and Steel.

The Union Steel Company, recently organized at Pittsburgh for the purpose of building a blast furnace, open hearth steel plant, rod, wire and wire nail mills, will probably not begin active work on the plant before spring. It is stated that contracts for 5000 horse-power engines have been placed with the E. P. Allis Company of Milwaukee and the Southwark Foundry & Machine Company of Philadelphia, Pa.

The new 108-inch plate mill at the Homestead steel works of the Carnegie Steel Company, Limited, bought from the Bethlehem Iron Company in the early part of the year, has almost been completed and will be tested this week. The 44-inch mill, also under erection, will be ready for operation about the first of the year.

The tin plate plant of the American Tin Plate Company at Washington, Pa., was closed down on Friday, November 10, for an indefinite period. Nearly all the large tin plate plants in the Pittsburgh district belonging to the American Tin Plate Company are now idle.

Some extensive improvements have recently been made to Rosena Furnace by the National Steel Company, at New Castle, Pa., by which the capacity has been considerably increased.

The Elliott-Blair Steel Company, New Castle, Pa., makers of fine cold rolled steel, are making some additions to their building and increasing the size and capacity of their annealing department. They are also enlarging and improving their storage and shipping facilities, enabling them to have direct railroad connections with their warehouse and to carry a larger stock of raw material. These additions and enlargements to the plant have been made necessary by the growth of the business of this concern, which has had a steady and very satisfactory increase for some years.

The McKenna Rail Renewing Company resumed work in their Kansas City mill on the 8th inst., after an idleness of several months, re-rolling partly worn steel rails to smaller sections.

The Chicago Insulated Wire Company are adding to their plant at Sycamore, Ill. The main building of this plant is a two-story brick, 50 x 200 feet, with a brick engine room adjoining, and a one-story brick warehouse, 30 x 75 feet. They are adding to the main building an extension to be 50 x 50 feet, to be occupied by wire drawing machinery. A new engine and boiler will also be installed and more machinery added to the equipment of the several departments.

The Hussey-Truzell Steel Company have been organized at Pittsburgh and will make application for a charter on December 1. The incorporators are O. P. Curran, C. G. Hussey, Ephraim Truzell, Joseph S. Speer and Lee Woodwell. The concern have purchased the cold roll steel plant at New Kensington, Pa., formerly operated by Howe-Brown & Co., Limited, and will begin the manufacture of agricultural implements. The plant will be entirely remodeled and new equipment installed.

At the Sharon works of the National Steel Company, at Sharon, Pa., there were turned out in October 18,269 tons of open hearth steel. This is the largest output in any month in the history of this plant.

The Baker Forge Company, at Ellwood City, Pa., are to be organized as the Steel Car Forge Company, with a capital of \$200,000. The plant will be considerably enlarged and the manufacture of railroad forgings will be commenced on a large scale. Henry R. Rea, now president of the Baker Forge Company, will be president of the Steel Car Forge Company, and James H. Frazer will be secretary and treasurer of the new company.

The W. J. Carlin Company, Lewis Block, Pittsburgh, who purchased some time ago the Bessemer steel plant of the Premier Steel Company at Indianapolis, Ind., are assembling material for the operation of this plant, but have not yet been organized. It is the intention to take out a charter for a concern to be known as the Pittsburgh Steel Company, to operate the plant. H. B. Miller, formerly of the Duquesne steel works of the Carnegie Steel Company, is identified with the new company.

Last week the Ellwood City plant of the American Tin Plate Company shut down temporarily, throwing out of employment 150 men. The shut down is indefinite and was caused by the hot mills getting in bad repair. It will resume operations again when the necessary repairs can be made. The district superintendent stated last week that in all probabilities five new mills would be added to this works during the shut down.

Superintendent O. T. Adams of the Greenville Tube Works, through directions from the Shelby Tube Company of Shelby, Ohio, started several of the departments of the Ellwood City tube mill, which has been idle for six months, last week. Mr. Adams thinks this mill will soon run full and steady.

The United States Steel Company have been incorporated to erect a plant in the vicinity of the New England Gas & Coke Company's works at Everett, Mass., utilizing the gas of that company for the conversion of scrap steel into what is called Jupiter steel.

Perry Brothers of Birmingham, Ala., have leased the Wil-

liamson Furnace, at Birmingham, and are now repairing it with the expectation of blowing in the furnace early in the coming January. The stack has been idle since 1892.

The Diamond State Steel Company, Wilmington, Del., experienced a fire loss on the 8th inst., which, however, affected but one of their small mills, and some spike and large rivet machines. They state that their mills producing bar iron, splice bars, &c., machine and track bolts works, small rivet and nut shop, horseshoe works, forge department, foundry and galvanizing works are uninjured and are running to their capacity, and that any orders on their books will receive good attention.

The American Steel & Wire Company are actively pushing the work of getting the furnaces at Crown Point, N. Y., into shape for work. The smaller furnace will probably be ready during the next month and is expected to make spiegeleisen. The second large stack will blow in early in January.

The Illinois Steel company, at Milwaukee, have received a permit for the erection of a machine shop. A foundry is to be erected next spring.

W. B. Scalfé & Sons of Pittsburgh have the contract for a large bar mill building and a boiler house, both of steel frame construction, which are to be added to the W. Dewees Wood Company plant at McKeesport, Pa.

The Morris & Bailey Cold Roll Steel Company, with offices in the German National Bank Building, Pittsburgh, and works at Wilson Station, Pa., have bought 10½ acres of ground adjacent to their present plant. At present nothing will be done with the ground, but some time in the future it will be used for additions to the works.

Oxford Furnace of the Empire Iron & Steel Company, at Oxford, N. J., has been blown out. It is to be raised 15 feet.

Machinery.

Through the intercession of the State Board of Arbitration the strike at the plant of the Sterling Boiler Company, Barberton, Ohio, was settled last week, both sides making concessions. The plant is again in full operation.

W. J. Carlin of Pittsburgh has purchased the interest of J. H. Carlin in the firm of Thomas Carlin's Sons, Allegheny, Pa. The business will be continued by W. J. Carlin under the name of Thomas Carlin's Sons.

The Siegrist Lubricator Company, St. Louis, Mo., have secured the contract for a complete automatic oiling system for the new electric power house of the Lindell Railway Company, St. Louis.

The Famous Filter Company, St. Louis, Mo., report a good demand for the waste oil refiner and purifier manufactured by them. An interesting number of sales have been made lately, and, in addition to a number being purchased for the United States Navy, a shipment has been made for the use of the Government in the department of Havana, Cuba.

Among new corporations recently empowered to organize in Illinois are the Litchfield Foundry & Machine Company, Litchfield. Capital, \$70,000; general manufacturing and foundry business. Incorporators, Mark M. Martin, Patrick E. Carroll and James M. Truitt.

T. C. Wright is building a foundry at West Superior, Wis., to be 50 x 140 feet, and to be ready for use by January 1.

All sorts of factories are outgrowing their facilities. Items like the following are frequently seen in the rural press: The Kesler Brass Company, Middleville, Mich., who have doubled the size of their factory twice in the past three years, have again found their business too large for their plant, and have started another foundry in a building formerly used as a warehouse, some distance from the works.

The incorporation is announced at Denver, Col., of the Great Western Pneumatic Tool Company, with a capital stock of \$250,000, by Lon D. Sweet, E. W. Bassick, W. F. Egan, F. E. Sweet and A. P. Schumacker, to manufacture Schumacker air drills under letters patent.

The Dodge Mfg. Company, Mishawaka, Ind., have elected the following officers: M. W. Mix, president; W. B. Hosford, vice-president; Charles Endlich, secretary and treasurer; George Phillon, superintendent. They have a great deal of work on hand, and, although they increased their facilities considerably during the year, they are now five months behind on general contracts and are 25,000 pulleys behind on orders. They see no evidence of abatement in new mill construction or in the demand for power transmission machinery, and fail to find any reason why the demand should not continue fully up to the present standard for the next 12 months at least.

The Barnard-Syphers Machinery Company are preparing to build an extensive warehouse and machine shop at Spokane, Wash. The new quarters will be arranged so that the company can manufacture wooden pulleys and parts of machinery as well as store the larger pieces of mill machinery, as they have in the past. The house are a branch of the Barnard & Lees Mfg. Company, Moline, Ill. The new building will be on the south side of the Great Northern tracks, west of Maple street, and 140 x 100 feet in size. The machine shop will occupy a space 60 x 75 feet, and will be fitted for repairing all kinds of mill machinery as well as manufacturing pulleys under the Barnard & Lees patents. In the warehouse there will be abun-

dant room for storing complete saw mill, wood working and flour mill machinery, engines &c.

The Ellwood City Gas Engine Company's plant of Ellwood City, Pa., started up again last week, pending the hearing of the case between that company and the Dallenbach Gas Engine Company, which was heard Wednesday.

The Braddock Machine & Mfg. Company have been organized at Braddock, Pa., to manufacture air compressors, machine tools and possibly gas engines. Ground has been bought upon which steel buildings will be erected. The main structure will be 60 x 300 feet, a smaller building 80 x 200 feet and a third 30 x 200 feet. The equipment is to be of the most modern design, and will include electric cranes and other appliances for the economical handling of material.

On Monday, November 13, the court confirmed the sale of the property of the New Castle Engineering Works, founders, machinists and boiler makers, at New Castle, Pa., to the Pennsylvania Engineering Works. The plant is to be put in shape for immediate operation, and the Pennsylvania Engineering Works are now ready to figure on any business in their line that may be offered them.

The Watt Plow Company of Richmond, Va., propose to build a foundry and machine shop.

The United Power & Transportation Company of Reading, Pa., propose to erect a machine shop and brass foundry. John A. Rigg is president.

The Bellows Falls Machine Company of Bellows Falls, Vt., are building a new foundry.

The Boynton Vacuum Company, San Francisco, Cal., have been formed to sell vacuum pumps. The incorporators are H. G. Walker, E. D. Moore, H. M. Graham, James S. Hunt and C. H. Boynton.

Hardware.

The St. Louis Axle Company, St. Louis, Mo., manufacturers of carriage and wagon axles of all kinds, report an excellent trade and inquiries for their product on the increase. In connection with their forge shops they operate a foundry for the manufacture of axle boxes and heavy hardware specialties.

Standard Horse Nail Company, New Brighton, Pa., advise us that they have been behind their orders since January 1, and from present indications will not catch up this year. This notwithstanding they are constantly enlarging their capacity.

The directors of the American Shovel Company, now erecting a manufacturing plant at New Castle, Ind., recently met and elected the following officers: George W. Miller, president; W. C. Hess, vice-president; Charles Mouch, secretary and general manager; Jonas Guar, treasurer. The company have a \$50,000 paid up capital. The sales department will be under the supervision of George W. Miller. Charles Mouch will have full charge of the shops.

The Forest City Bit & Tool Company, Rockford, Ill., have about completed important improvements in their plant. They have made a large addition to their main building, erected a new engine house and blacksmith shop, and installed much new machinery, with the expectation of doubling their working force.

The Quincy Hardware Mfg. Company, manufacturers of metal box straps and other wrought steel and wire articles, have decided to remove their business from Quincy, Ill., to Chicago. A building is being prepared for their occupancy at Seventeenth and Clark streets, in the latter city, where their facilities and equipment will be more than doubled. The company, however, will not remove their office to Chicago until January 1. The reason for the removal is because most of the interests of James E. MacMurray, president and principal owner, are in Chicago, and much of his time has recently been spent there.

Miscellaneous.

The principal stockholders of the new American Window Glass Company met yesterday in the Farmers' Deposit National Bank and elected James A. Chambers president, M. K. McMullin first vice-president, William Loeffler second vice-president, T. F. Hart of Muncie, Ind., third vice-president, E. I. Phillips of New Castle secretary, and William G. McCandless treasurer. These officials will form the Board of Directors, together with H. Sellers McKee, T. Hart Given, P. A. B. Widener, William L. Elkins and S. L. Bodine of Philadelphia, Thomas Wightman, H. B. Smith of Hartford City, Ind., J. G. Sayre and N. T. De Pauw of Alexandria, Ind.

James Rees & Sons Company, boat builders, Fourth street and Duquesne Way, Pittsburgh, have received an order from the American Coke Company for two tow boats, each to be 135 feet long, with a 24-foot beam. The company have sublet the work of the hull to the Elizabeth Marine Ways Company, Elizabeth, Pa. The contract calls for the completion of one boat in February and the other in May. It will be recalled that the American Coke Company are an identified interest of the American Steel & Wire Company, and these boats will be used to bring coal down the Monongahela River from coal mines owned by the American Steel & Wire Company to their different works in the Pittsburgh district. They will thus make themselves independent of the recently organized coal combine.

The Pressed Steel Car Company of Pittsburgh are preparing plans for the building of additional shops at their car works in

lower Allegheny, Pa. The buildings will be located on the land recently bought by them from the Baker Chain & Wagon Iron Mfg. Company, and the buildings will be equipped with the latest machinery and tools at a cost of about \$200,000. The company are building at their new works at McKee's Rocks, Pa., for the Pennsylvania Railroad, 1000 of the largest coal cars ever made. They are the self-clearing hopper variety and have a cubic capacity of 2055 feet, and will carry 110,970 pounds of coal. The new works at McKee's Rocks are almost completed and will soon have a daily capacity of 30 cars. The Pressed Steel Car Company will be turning out from their three works in the Pittsburgh district from 120 to 130 cars per day. When it is remembered that the first steel car was exhibited at the convention of the Master Car Builders' Association in Saratoga, N. Y., in the summer of 1896, while now thousands of these cars are in use, the development of the pressed steel car business has been nothing short of wonderful. The consumption of plates for the manufacture of steel cars is enormous, the greater part of the business going to the Carnegie Steel Company, at Pittsburgh.

The plant of the Pennsylvania Car Wheel Company, located in lower Allegheny, is now turning out about 450 car wheels per day. Some additions are being made to the plant, however, which will increase this output to about 600 wheels per day.

The Raton Coal & Coke Company, Raton, New Mex., whose plant was destroyed by fire last year, have completed a large steel frame trestle, several steel frame buildings, steel coal chutes and water tanks. Wm. B. Scaife & Sons, Pittsburgh, Pa., had the contract for this work; also for furnishing a considerable quantity of corrugated iron roofing and siding for several other buildings.

The Union Boiler Tube Cleaner Company of 238 Penn avenue, Pittsburgh, Pa., have just completed contract for cleaning two Hazelton or Porcupine boilers, having over 2000 tubes, one end of which is welded tight. These tubes were badly scaled, and the closed end required a special tool of unique design as well as their own design of flexible shaft.

The Hemacite Mfg. Company of Trenton, N. J., have filed a certificate with the Secretary of State, changing their name to the Trenton Brass & Machine Company and increasing their authorized capitalization from \$25,000 to \$100,000. The certificate making the change is signed by Ferdinand W. Roebeling as president and W. G. Gandy as secretary.

Catalogues Wanted.—On December 1 Van Voorhis y Sanford of Monterey, Mexico, will open a branch house in Parral, Chihuahua, Mexico. In Parral, as in Monterey, they will carry a full line of pipe, fittings, machinists' supplies and mining supplies and tools of every description. They propose to carry stocks of Worthington steam pumps, Erie Engine Works boilers, Gates Iron Works crushers, stamp mills, &c. They ask that catalogues and discount sheets of goods in their line be sent to them, addressed to Parral.

The Pinkney Mining Company, capitalized at \$50,000, have been organized for the purpose of mining iron ore lands in Lawrence County, Tenn. The ore property in question is owned by the Lawrence Iron Company, of which Henry McCormick of Harrisburg, Pa., is the principal owner. This property contains over 2,000,000 tons of brown ore at Pinkney, Tenn., near Sheffield and Florence, Ala., and the owners of the property, with the exception of one or two others, have organized the mining company to mine ore upon the property, paying the Lawrence Iron Company a royalty. The officers of the Pinkney Mining Company are: President, Vance C. McCormick; secretary and treasurer, Henry B. McCormick; general manager, Daniel King. Both companies will be under the control of Henry McCormick. The building of a blast furnace is under consideration for the purpose of utilizing the ore, but in the meantime the expectation is to market the ore to the furnaces in the neighborhood.

The bond for construction and equipment of the New York Underground Rapid Transit Railroad was reduced by the Appellate Division of the Supreme Court from \$14,000,000 to \$5,000,000. This move will enable a greater number of contractors to bid on the work. The advertisement for bidders for the first section from the Brooklyn Bridge to Fifty-ninth street was published to-day. It is estimated that this section will cost about \$10,000,000. Bids will probably be opened on January 15, although the board may prolong the period.

The American Blower Company of Chicago announce that their Chicago office is now located in the Marquette Building, in charge of L. E. Rodgers. The company manufacture hot blast apparatus, fans, brick and lumber dryers, blowers, exhausters and engines.

The Pittsburgh Steel Shafting Company of Rankin, Pa., have issued a price-list of turned, rolled and polished steel shafting, of square bars for keys, splines, &c., and of hexagon bars.

The Iron and Metal Trades.

On the whole the week under review has been a quiet one. In the raw materials the situation is unchanged. The greater part of the Coke supply for next year has been contracted for on the basis of \$2.65 and \$2.75 for Furnace Coke at ovens, while the Ore contracts for next year have not yet been closed.

In Pig Iron there has been continued activity in Chicago, but in the other distributing markets the volume of business has not been large. In the Central West the only large transaction has been the sale of about 40,000 tons of metal, the parties to the transaction being allied interests.

Rumors have been current to the effect that one very large transaction in Steel Billets between two leading interests has been closed, but the evidence points to the fact that the sale has not gone through. It is quite evident that the rush for prompt delivery on Steel Billets is over and that heavy premiums are not being paid for prompt Steel. This is putting an end to the high nominal prices. This creates the impression of a decline, when, as a matter of fact, the figure at which new contracts for 1900 delivery are being entered into, say \$36, Pittsburgh, is a heavy advance on the figure at which old contracts now expiring were taken.

Chicago reports a sale of 25,000 tons of Wire Rods for export, and it appears also that a leading consumer has contracted for a very large quantity for the first half of 1900.

In the West there have been good sales of Steel Rails, one of the orders calling for 60 miles of Light Rails for a new Utah road. It is reported also that a Western mill has contracted for the delivery of a heavy tonnage of Girder Rails for Glasgow, Scotland.

The specifications have been issued for the Wire cables for the New East River Bridge at New York, the quantity of high grade Wire called for being about 5000 tons. In this connection it may be noted that there is a possibility that the great North River Bridge may soon get beyond the stages of a project.

The Iron trade is watching keenly developments in the New York Rapid Transit project, which would bring out a very large amount of work.

Generally speaking, there is a good deal of figuring going on in our large cities on Structural material for sky scrapers, which indicates that current prices are not cutting off important undertakings in this line.

Philadelphia is now committed to a heavy outlay for a new water supply, which means some big requirements for Cast Iron Pipe.

The Western Bar mills are still in receipt of nice orders from car builders, who are still entering new business heavily. In other departments of the Finished trade, however, the demand is slackening, and makers are drawing on their heavy supply of old orders. In some branches, however, the scramble for orders is getting lively. This applies particularly to the Sheet mills, who are selling at close figures, considering the current prices for Steel. Steel Plates, too, are selling at lower prices.

We are now rapidly approaching the period of the year when the actual consumption of Iron and Steel in many branches of the industry falls off quite heavily, but preparations are always made during this time to accumulate a supply for the spring trade, always the largest in volume of the year.

A Comparison of Prices

At date, one week, one month and one year previous.

Advances Over the Previous Month in Heavy Type. Declines in Italics.

	Nov. 15, 1899.	Nov. 8, 1899.	Oct. 18, 1899.	Nov. 16 1898.
PIG IRON:				
Foundry Pig, No. 2, Standard, Philadelphia.....	\$23.50	\$23.75	\$22.75	\$10.75
Foundry Pig, No. 2, Southern, Cincinnati.....	20.75	.....	20.75	9.75
Foundry Pig, No. 2, Local, Chicago.....	23.00	23.00	23.00	11.00
Bessemer Pig, Pittsburgh.....	24.50	24.50	24.50	10.10
Gray Forge, Pittsburgh.....	21.00	21.00	20.50	9.15
Lake Superior Charcoal, Chicago.....	25.50	25.50	25.00	11.50
BILLETS, RAILS, ETC.:				
Steel Billets, Pittsburgh.....	36.00	38.00	39.00	14.85
Steel Billets, Philadelphia.....	40.00	40.00	40.00	17.00
Steel Billets, Chicago.....	.....	.....	.....	17.00
Wire Rods, Pittsburgh.....	.....	.....	48.00	21.00
Steel Rails, Heavy, Eastern Mill.....	35.00	35.00	35.00	.....
Spikes, Tidewater.....	2.65	2.65	2.65	1.40
Splice Bars, Tidewater.....	2.35	2.30	2.25	1.05
OLD MATERIAL:				
O. Steel Rails, Chicago.....	20.00	20.50	20.00	8.00
O. Steel Rails, Philadelphia.....	24.00	24.00	21.50	10.25
O. Iron Rails, Chicago.....	31.00	33.00	.....	12.75
O. Iron Rails, Philadelphia.....	26.00	26.00	25.00	12.75
O. Car Wheels, Chicago.....	30.00	30.00	30.00	11.25
O. Car Wheels, Philadelphia.....	24.00	24.00	21.00	10.00
Heavy Steel Scrap, Chicago.....	19.00	17.00	17.00	7.75
FINISHED IRON AND STEEL:				
Refined Iron Bars, Philadelphia.....	2.20	2.20	2.10	1.10
Common Iron Bars, Youngstown.....	2.20	2.20	2.25	.95
Steel Bars, Tidewater.....	2.50	2.50	2.40	1.10
Steel Bars, Pittsburgh.....	2.25	2.25	2.35	.95
Tank Plates, Tidewater.....	2.90	2.95	3.00	1.25
Tank Plates, Pittsburgh.....	2.50	2.60	2.75	1.12½
Beams, Tidewater.....	2.40	2.40	2.40	1.35
Beams, Pittsburgh.....	2.25	2.25	2.25	1.20
Angles, Tidewater.....	2.40	2.40	2.40	1.20
Angles, Pittsburgh.....	2.25	2.25	2.25	1.10
Skelp, Grooved Iron, Pittsburgh.....	2.00	2.00	2.10	1.10
Skelp, Sheared Iron, Pittsburgh.....	2.40	2.40	2.40	1.20
Sheets, No. 27, Chicago.....	3.00	3.00	3.15	2.00
Sheets, No. 27, Pittsburgh.....	2.95	3.00	3.10	1.85
Barb Wire, f. o. b. Pittsburgh.....	3.55	3.55	3.55	1.65
Wire Nails, f. o. b. Pittsburgh.....	2.95	2.95	2.95	1.30
Cut Nails, Mill.....	2.50	2.50	2.50	1.07½
METALS:				
Copper, New York.....	17.00	17.00	18.00	12.87½
Spelter, St. Louis.....	4.40	4.50	5.20	5.10
Lead, New York.....	4.57½	4.57½	4.60	3.70
Lead, St. Louis.....	4.45	4.45	4.50	3.60
Tin, New York.....	26.50	30.00	30.50	17.90
Antimony, Hallett, New York.....	9.75	9.75	9.75	9.00
Nickel, New York.....	40.00	40.00	36.00	35.00
Tin Plate, Domestic, Bessemer, 100 lbs., New York.....	4.82½	4.82½	4.82½	2.80

* Nominal.

Chicago. (By Telegraph.)

Office of The Iron Age, 805 Fisher Building, CHICAGO, November 15, 1899.

The local market has afforded quite a number of interesting features during the past week. Among these are the continued demand for cars, the remarkable prolonged activity in Pig Iron, the development of some heavy Rail and Rod business for export, and placing of contracts for bridges and the decided weakness in Sheets. General conditions are of the most promising character, notwithstanding the state of the Sheet trade, which is ascribed to special influences. A better supply of cars is now available for Coke shipments from the Connellsville district, but serious difficulty is still encountered in securing shipments from West Virginia and the Pocahontas region.

Pig Iron.—Consumers of Pig Iron appear to be insatiable. Those who covered their requirements some time since for the first half of next year are now buying for the last half. A great deal of tonnage was placed for such delivery during the past week. Orders were also numerous for earlier shipments. Numerous sales are reported of Lake Superior Charcoal, Southern Coke and Ohio Irons. The orders placed included quite a number of fair sized quantities running up to 3000 or 4000 tons each, while the demand from the smaller buyers was unusually good. A rather exceptional transaction for this locality covered several thousand tons of Southern No. 4 Foundry. Malleable foundrymen have been liberal buyers of Charcoal recently, and much more business is expected in that direction, as the trade have by no means fully covered. Some of the makers of Lake Superior Charcoal have withdrawn from the market in consequence of the strong demand for such Iron, and will wait for still higher prices. Local Coke is in very short supply, practically none being available for early delivery. Silvery Irons are in strong demand for quick shipment, and it is stated to be impossible to get High Silicon Iron. We quote for cash as follows:

Lake Superior Charcoal.....	\$25.50 to \$26.50
Local Coke Foundry, No. 1.....	24.00 to 25.00
Local Coke Foundry, No. 2.....	23.00 to 24.00
Local Coke Foundry, No. 3.....	22.50 to 23.00
Local Scotch, No. 1.....	24.00 to 25.00

Ohio Strong Softeners, No. 1.....	24.50 to	25.00
Southern Silvery, according to Silicon.....	25.50 to	27.00
Southern Coke, No. 1.....	22.85 to	23.85
Southern Coke, No. 2.....	21.85 to	22.85
Southern Coke, No. 3.....	21.10 to	21.85
Southern Coke, No. 1 Soft.....	22.85 to	23.85
Southern Coke, No. 2 Soft.....	21.85 to	22.85
Foundry Forge.....	20.80 to	21.35
Gray Forge and Mottled.....	20.80 to	21.35
Southern Charcoal Softeners, according to Silicon.....	21.85 to	25.85
Alabama and Georgia Car Wheel.....	24.85 to	25.85
Malleable Bessemer.....	..... to	25.00
Standard Bessemer.....	25.00 to	26.50
Jackson County and Kentucky Silvery, 8 per cent. Silicon.....	31.80 to	32.50

Bars.—Implement manufacturers who did not buy as they should are again in the market. Car building requirements are heavy. All kinds of miscellaneous consumers are steadily placing orders. Jobbers are obliged to continue to replenish their stocks. The market for both Bar Iron and Soft Steel Bars is therefore in excellent condition. Mill shipments of Common Iron are maintained at 2.30c. to 2.40c., Chicago, for future delivery, and up to 2.60c. for prompt shipment, while Soft Steel Bars range from 2.35c. to 2.65c., according to conditions of contracts. Mill shipments of Hoops are unchanged at 2.65c., base, for Bands, Chicago. Jobbers report a heavy business, with as much difficulty as ever in trying to keep up assortments. Back orders accumulate so rapidly that when shipments are received from mills they are immediately absorbed, and stocks are not replenished. Small lots from stock are quoted at 2.90c., minimum, for Bar Iron; 2.65c. to 3c. for Soft Steel Bars, and 3.90c. to 4c. for Norway and Swedish Iron.

Car Material.—New orders for cars are stated to have recently been averaging 1000 a day. The demand for all kinds of car material is therefore very heavy. Manufacturers of such material are getting further in arrears on deliveries.

Structural Material.—The unsettled condition of the labor question seriously affects the local building trade. The demand from the outside, however, is fair for the season, quite a good run of small orders being reported. The largest contract of the week was one of probably 10,000 tons, covering the bridge requirements for the coming year of a leading railway. Universal Plates are now somewhat lower than they have been quoted for a long time. Mill shipments are quoted as follows, Chicago delivery: Beams, Channels and Zees, 15-inch and under, and Angles, 3 to 6 inches, 2.40c.; Beams, &c., 18 inches and over, and Angles over 6 inches and under 3 inches, 2.50c.; Tees, 2.45c.; Universal Plates, 2.90c. The demand on local stocks of Shapes is very good, while prices are considerably above the usual difference on mill shipments.

Plates.—Jobbers report a fair demand, which is probably about equal to that usually prevailing at this season. Mill representatives have had a moderate run of orders, trade having been lighter than during the early fall. Prices show some irregularity, the mills making limited sizes being most in need of orders. On the usual orders now coming up the following quotations continue to represent the market on mill shipments, Chicago delivery: Tank, 3c. to 3.15c.; Flange, 3.25c. to 3.40c.; Marine, 3.35c. to 3.60c.; Fire Box, 4c. to 5½c. Jobbers quote Tank in small lots at 3.30c. to 3.40c., and Flange, 3.35c. to 3.65c.

Merchant Pipe.—Conditions continue about same as reported for several weeks. Manufacturers' agents report a fair demand with prices firmly maintained. They quote carload lots at 50 and two 10's, and less than carloads at 5 per cent. higher. Merchant Steel Boiler Tubes are quoted as follows: 1¼ to 1½ inches, 35 per cent. off on Steel or Iron; 2 to 2½ inches, 50 per cent. off on Steel and 45 per cent. off on Iron; for 3-inch and larger, 52½ per cent. off on Steel, 47½ per cent. off on Iron.

Cast Iron Pipe.—Manufacturers report a demand for quick shipments of small lots, but no large business has been placed. Some delay is caused in making contracts by the necessity of revising estimates of cost, owing to advances in prices made since negotiations first opened.

Sheets.—The local Sheet market is disturbed by the difficulty which has broken out between employers and their workmen in the Sheet metal trade. All the men have been locked out until the union shall see fit to withdraw claims which have been made against a local firm, which are stated to be of an unreasonable character. This event does not improve an already unsatisfactory situation. Manufacturers are seeking business and consequently prices are weak. Galvanized Sheets are lower, partly because of the drop in Spelter, and partly on account of accumulated stock at the mills. The quotations now made are completely out of line with prices on other Steel products. It is a peculiarity of the time that No. 16 Galvanized Sheets can be bought at less per pound than ¼ inch and heavier Tank Steel. Mill ship-

ments of No. 27 Black Sheets are quoted at 3c. to 3.15c., Chicago, and Galvanized at 75 to 75 and 5. Jobbers report a fair demand for small lots. They quote small lots from stock at 3.25c. to 3.40c. for No. 27 Black, and 70 to 70 and 10 per cent. off for Galvanized.

Merchant Steel.—Considerable business is again reported by sales agents. Manufacturing consumers and jobbers are placing good contracts for future delivery. Mill shipments, Chicago delivery, are quoted as follows: Smooth and Finished Machinery Steel, 2.95c. to 3.05c.; Smooth Finished Tire, 2.80c. to 3c.; Open Hearth Spring Steel, 3.60c. to 3.75c., base.; Toe Calk, 3.20c. to 3.50c., base.; Sleigh Shoe, 2.75c. to 3c.; Cutter Shoes, 3.45c. to 3.65c.; Ordinary Tool Steel, 7c. to 7½c.; Special, 13c. and upward. Jobbers are quoting from store: Crucible Spring Steel, 6c. rates; Open Hearth Spring Steel, 5c.; Smooth Machinery Steel, 5½c.; Toe Calk Steel, 4c.

Billets and Rods.—Inquiries for Billets are being received in the local mills which they are unable to entertain, as they are still fully sold up. Sales of Wire Rods for export covering the greater part of next year and understood as aggregating about 25,000 tons have been made at a high price, showing the stiffness of competing makers. It is not likely that Rods could be bought here for domestic delivery during the same period at less than \$50.

Rails and Track Supplies.—Negotiations are pending for about 30,000 tons of Rails and Fastenings for export. Domestic sales of Standard Rails cover several thousand tons for the week at \$35 and upward, according to quantity. The business in Light Rails during the week covered among such sales a sufficient quantity to lay 60 miles of railroad in Utah. The price of Light Rails is \$35 to \$42, according to weight. Track Fastenings are in continued demand. Quotations are as follows: Steel Fish Plates, 2.50c.; Iron Fish Plates, 2.50c. to 3c.; Spikes, 2.75c. to 2.80c.; Track Bolts, with Hexagon Nuts, 3.95c. to 4c.; Square Nuts, 3.80c. to 3.85c.; Steel Links and Pins, 3.25c.; Iron Links and Pins, 3.15c.

Old Material.—The market appears to be slightly better. Consumers are taking a little more material than they were. A special feature of present conditions, however, is a flurry among dealers, caused by large consumers insisting on deliveries on contracts made some time since. This has caused sharp search for some certain classes of Scrap, and it is therefore possible that higher rates have been occasionally made than those given in our quotations. Some prices are a little lower than previously quoted, owing to special conditions. Approximate market prices are as follows per gross ton:

Old Iron Rails.....	\$31.00 to	\$32.00
Old Steel Rails, mixed lengths.....	20.00 to	20.50
Old Steel Rails, long lengths.....	22.50 to	23.00
Relaying Rails.....	25.00 to	27.50
Old Car Wheels.....	20.00 to	20.50
Heavy Melting Steel Scrap.....	19.00 to	20.00
Mixed Steel.....	14.00 to	14.50

Following prices are per net ton:

No. 1 Railroad Wrought.....	\$24.00 to	\$25.00
No. 1 Railroad Track.....	20.50 to	21.00
Dealers' Forge.....	18.00 to	19.00
Iron Fish Plates and Angle Bars.....	26.00 to	27.00
Steel or Mixed Iron and Steel ditto ..	21.50 to	22.50
No. 1 Cut Mill, for busheling.....	13.50 to	14.50
Pipe and Flues.....	13.00 to	13.50
Heavy Cast.....	15.50 to	16.00
Stove Plate.....	10.50 to	11.00
Railroad Malleable Cast.....	..... to	16.50
Agricultural Malleable Cast.....	..... to	15.00
Iron Car Axles.....	31.00 to	32.00
Steel Car Axles.....	25.00 to	25.50
Horseshoes.....	18.00 to	19.00
Cast Borings.....	10.00 to	10.50
Steel Car Axle Turnings.....	12.00 to	12.50
Iron Car Axle Turnings.....	13.00 to	14.00
Machine Shop Turnings.....	11.50 to	12.00
Old Boilers, Iron, whole.....	8.00 to	9.00
Old Boilers, Iron, cut.....	14.00 to	15.00
Old Boilers, Steel, whole.....	7.00 to	8.00
Old Boilers, Steel, cut.....	13.00 to	14.00

Metals.—Lake Superior Copper is a little firmer. Carload lots are now quoted at 17¼c. Casting Copper is held unchanged at 17¼c. Pig Lead is quiet but still quoted at 4.55c. Spelter has dropped to 4.45c. It does not often happen that Spelter is quoted lower than Lead. The price of Zinc Ore has fallen considerably, and it now looks as if Spelter would continue cheap for some time.

Tin Plate.—The general demand for Tin Plate is probably not so active as it has been, but a good trade is reported in particular lines. The demand is, for instance, remarkably heavy for Coke Plates in furnace sizes. Manufacturers are making a little better delivery on mill shipments, and the trade is therefore better supplied, but prices are unchanged.

The Stowell Mfg. & Foundry Company, South Milwaukee, Wis., have opened an office at 91 Lake street, Chicago, in charge of A. W. Wagner, for the sale of their specialties, comprising Brass, Gray and Malleable Castings, Door Hangers and Rail, Registers and Ventilators, Tackle Blocks, &c.

Philadelphia.

Office of The Iron Age, Forrest Building, }
PHILADELPHIA, PA., November 14, 1899. }

The situation in Iron and Steel is becoming difficult to diagnose with much confidence. In a general way there is not much change from last week, but there are indications of hesitancy, which is in marked contrast to recent experiences. There are no distinct evidences of weakness, nor is there any decided change in prices, but buyers are less numerous and less disposed to bid for large lots of material. This feeling is to some extent having its influence on sellers, who without being disposed to make radical concessions are nevertheless inclined to yield something rather than to lose a trade. Stocks are light, prospects of a heavy demand do not appear to be materially impaired, costs of production are going to be high, all of which will prevent any serious or sudden decline, even if there is to be any decline at all. It is believed, however, that the dullness of the past week or two is due more to a desire to secure a safe basis for more extended operations than to any expectation that there is to be any special decrease in the volume of business. There is no doubt that the supply of local Steel will be much larger next year than during the one now drawing to a close, and for that reason consumers in all departments are buying as little as possible until there is something definite in regard to what prices are likely to be during the coming year. Last week we made reference to the falling off in the demand for Skelp, and for Sheets, which might be repeated again to-day, including one or two other specialties, but it is still thought that this is only temporary, and that mills will begin to fill up again in the near future. The real danger—if any—is in larger supplies and not in a smaller demand. The situation, however, is so entirely unprecedented that the trade find it impossible to do more than grope their way along, until there are some clear indications in regard to both supply and demand. A fair summary of the events of the past week's business would not be as distinctly favorable as for some time past, but, considering the season, a slight falling off in the demand as well as a little lowering in quotation should not cause surprise.

Pig Iron.—Prices are not lower than they were a week ago, but they are less uniform and less strong. The statistical situation is probably unprecedented; stocks on hand, according to last week's statement, are less than a week's consumption. Add to this the fact that the cost of production during the coming year will be about double what it was last year, and it will be seen that there is not much room for a decline, and even if there is any decline at all, it cannot be either important or rapid. From a statistical standpoint, prices ought to be higher, and not a few good judges expect that they will be higher before there is any appreciable decline. In times like these, however, the most elaborate theories are liable to miscarry, so that it is not worth while to map out any particular course which the market is likely to follow. Theories did not work out very well during the past eight or ten months, so that there is less disposition to take risks or to make predictions than there was a year ago; \$12 and even \$15 to \$16 Iron was thought to be a possibility, but \$20 Iron was scouted as something too absurd to be considered. At this time, however, \$30 Iron is not regarded as an extreme improbability, nor is \$18 to \$20 Iron considered as altogether out of the way, and moreover, there is reasonableness on both sides of the question. It would not take much to turn the market in either direction. If prices take another upward turn they would be likely to come pretty close to the high figure. If they turn the other way it would be a gradual decline for reasons which are obvious to close observers. There is no Iron on hand for quick delivery, and until that comes prices are not going to decline much, although forward deliveries might be discounted a little. Considerations of this kind may cause, and are causing, some hesitancy, but it is not likely to last long. At these prices, and in these times, the market will not remain in a condition of uncertainty for any length of time, it will be either up or down, not much perhaps, but enough to give a pretty good idea as to the direction in which things are working. Sales during the past few days have been rather light, and in some cases prices have not been quite as strong as they were a week ago, but there is no pressure to sell, so that for the present it is something of a "stand off" on both sides. The range of prices at this time is about as follows for Philadelphia and its equivalent: No. 1 X Foundry, \$25 to \$25.50; No. 2 X Foundry, \$23.50 to \$24.25; No. 2 Plain, \$22.50 to \$23; Standard Mill Iron, \$20.25 to \$21; Basic, \$23.25 to \$23.50; Bessemer, nominal, \$25 to \$26; Low Phosphorus, \$27.50 to \$28.

Muck Bars.—There is more inquiry, and a probability of some large lots being taken in the near future. Mak-

ers quote \$31 to \$31.50, f.o.b. on cars their mills, and although bids are below these figures, it is thought that business will be done at about \$31.

Billets.—Buyers and sellers seem to be as far apart as ever. Steel is wanted in large blocks, but at the present asking price (\$40 to \$42, according to date of delivery) buyers are inclined to hold off for better terms.

Plates.—There is a good demand but prices are not strong, and good sized lots can be had at somewhat lower prices than have been quoted for some time past. Options on several large lots have been given subject to acceptance within a few days, but they are contingent upon other contracts which, however, are likely to go through. There is no great pressure to either buy or sell, and it is thought that the dullness will not last long, as there is a great deal of work in sight, particularly for bridge and ship work. Prices are about as follows, for deliveries at seaboard or nearby points: Steel Plates, 1/4-inch and thicker, 2.90c. to \$3c.; Shell, 3.10c. to 3.15c.; Flange, 3.30c.; Fire Box, 3.40c.; Charcoal Iron Plates, C. H. No 1, 3.15c.; Best Flange, 3.65c.; Fire Box, 4.15c.

Structural Material.—There is no change in the general situation, although not quite as heavy premiums are paid for quick deliveries as was the case some time ago. There is plenty of work on the books, however, and the nominal combination prices are still something less than would be accepted for any business of an ordinary character. Large lots, with ample time for deliveries, are quoted as follows, small lots 20c. to 25c. more money (seaboard or nearby deliveries): Beams and Channels, 15 inches and under, 2.40c.; Angles, 3 to 6 inches, 2.40c.; Zee Bars, 2.40c., f.o.b. Philadelphia; Angle Bulbs and Deck Beams, 2.63c.; Tees, 2.45c.

Bars.—Mills are well employed, and find a good deal of new business coming in for long deliveries, but prices for such are somewhat easier. Prompt shipments are not as hard to secure as was the case some time ago, so that taking everything into account, the market is somewhat in buyer's favor. The falling off in the demand for Skelp has turned some of the mills on Bars, and this is in some measure responsible for freer offerings. General quotations for delivery at seaboard or nearby points are about as follows: Ordinary Iron, 2.10c. to 2.15c.; Refined Iron, 2.20 to 2.25c.; Test Iron, 2.30c. to 2.35c.; Steel Bars, 2.50c. to 2.75c.

Sheets.—The market is rather quiet, but there is enough business to keep the mills at work pretty well up to their full capacity. Prices are about the same as last week, and for best makes are quoted as follows (Common Sheets two-tenths less): No. 10, 3c. to 3.05c.; No. 14, 3.20c.; No. 16, 3.30c.; No. 18-20, 3.40c.; Nos. 21-24, 3.50c.; Nos. 26, 27, 3.60c.; No. 28, 3.70c. to 3.80c.

Old Material.—Prices are still well up to the top figures yet reached, although consumers claim that they are very much out of proportion to the finished product. Sales have been made at outside prices, however, bids and offers at this time being about as follows for deliveries in buyers' yards: Cast Borings, \$14.50 to \$15.25; Wrought Turnings, \$16 to \$17; Machinery Cast, \$18 to \$19; Old Car Wheels, \$24 to \$24.50; Heavy Steel Scrap, \$22 to \$22.50; Steel Rails, \$24 to \$25; Iron Rails, \$26 to \$28; No. 1 Yard Scrap, \$21 to \$22; No. 1 Railway Scrap, \$26 to \$28; Iron Axles, \$33 to \$36; Steel Axles, \$30 to \$32.

H. H. Bailey, formerly of J. F. Bailey & Sons of this city, has been appointed purchasing agent for Dunham, Carrigan & Hayden Company of San Francisco, and will have offices in the Graham Building, 127 Duane street, New York City.

Morse, Williams & Co. have removed their main offices from 1105 Frankford avenue to the West End Trust Building, Broad street and South Penn Square, Philadelphia.

Cincinnati. (By Telegraph.)

Office of The Iron Age, Fifth and Main streets, }
CINCINNATI, November 15, 1899. }

There has been a good steady market throughout the past week. The tonnage has been a fair one in the aggregate, though composed almost entirely of small orders. A fair sprinkle of 200 to 500 ton orders, and so far as reported, but one for so large an amount as 1000 tons. There are but few of the larger buyers manifesting any interest in the market. The outlook now seems to be good for a steady continued buying on about the same lines as those of the past two weeks. The situation is a strong one, and seems to have recovered entirely from the little uncertainty of three or four weeks ago. Prices are hardly quotably higher, though several sales of No. 2 Southern Foundry are reported at \$18, Birmingham.

Some furnaces are still quoting Forge Irons at \$15.75, though as a rule \$16 to \$16.25 are the figures. A sale of 1000 tons of Gray Forge, delivered at the buyer's mill in Birmingham, is quoted at \$16.15. If there is any real change in selling prices it is certainly not in the downward direction at this writing. The Coke market is much disturbed over the shortage of cars, and it is reported almost impossible to keep consumers supplied with their bare daily necessities. Coke of the Pocahontas grade is quotable here at \$4.60 to \$4.75, f.o.b. Cincinnati. We quote, f.o.b. Cincinnati:

Southern Coke, No. 1.....	\$21.75
Southern Coke, No. 2.....	20.75
Southern Coke, No. 3.....	19.75
Southern Coke, No. 4.....	19.50
Southern Coke, No. 1 Soft.....	21.75
Southern Coke, No. 2 Soft.....	20.75
Southern Coke, Gray Forge.....	\$19.00 to 19.50
Southern Coke, Mottled.....	19.00 to 19.50
Ohio Silvery, No. 1.....	30.00
Ohio Silvery, No. 2.....	29.00
Lake Superior Coke, No. 1.....	\$23.50 to 24.00
Lake Superior Coke, No. 2.....	22.50 to 23.00

Car Wheel and Malleable Irons.

Standard Southern Car Wheel, Chilling Grades.....	\$24.75
Standard Southern Car Wheel, No. 2.....	23.75
Lake Superior Car Wheel and Malleable.....	25.00

Plates and Bars.—With an unchanged price-list new business is coming in a good steady stream, and conditions still favor the seller. We quote, f.o.b. Cincinnati: Iron Bars, carload lots, 2.25c., with half extras; small lots, 2.60c., with full extras; Bar Steel, in car lots, 2.50c., with half extras; small lots, 2.95c., with full extras; Iron Bar Angles, 1½ x 3-16 inch and larger, in car lots, 2.65c.; small lots, 2.80c.; Sheets, No. 10, 3.15c.; No. 27, Stove Pipe, 3.25c.; No. 27, Steel, 3.35c.; Plates, 3c. to 3.10c.

Old Material.—No change in the market reported, trade is quoted as very satisfactory. We quote, f.o.b. Cincinnati: No. 1 Wrought Railroad Scrap, \$22 to \$23 per net ton; Cast Scrap, \$15.50 to \$16 per gross ton; Axles, \$26 to \$27 per net ton; Iron Rails, \$28 to \$29 per gross ton; Car Wheels, \$20 to \$21 per gross ton.

Cleveland.

CLEVELAND, November 14, 1899.

Iron Ore.—The situation during the past week has been characterized by widely divergent conditions, which changing constantly has resulted in alternating feelings of depression and satisfaction on the part of both shippers and vesselmen engaged in the Ore carrying trade. As might be expected, there have been, during the greater part of the time, two distinct views as to significance of the indication and the outcome. To begin with, the rates for carrying Ore during the remainder of the present season have been steadily pounded down until the tariff from the head of the lakes is only \$1 per ton. The Ore shippers hailed this depression as an indication that high ideas held by vesselmen ever since the rate shot up to \$2, early in the fall, were to a great extent unjustified. The men in the carrying trade, on the other hand, contend that the slump is due to a sudden concentration of unfavorable circumstances, chief among which was the sudden suspension of grain shipments, resulting naturally in the great bulk of the lake fleet being thrown into the Ore trade, when there was very little more on the market to be moved. The net result, whatever may be its effect upon the market during the remainder of this season, has caused no alteration whatever in the situation for 1900. Plenty of Ore is still being offered to vessels at \$1.25 per ton, and the vesselmen who have held off thus long show no disposition to close up charters hurriedly, as a result of the new developments. The Ore sales market for next year continues in about the same condition as at the last writing. Sales of Ore not controlled by the association are being made daily at prices that range from 65 to 90 per cent. in excess of last year's prices. The conservative element still cling tenaciously to the argument that the optimists who have been predicting a production of 20,000,000 tons in 1900 have seriously overestimated, and they add that if the price of Ore is to be doubled, as some persons think, that sales will drop off accordingly—in other words, that furnacemen will purchase just what they are compelled to for immediate needs, and will defer all purchases beyond that amount in anticipation of a fall in prices. Some of the arguers on the bearish side of the market have also claimed that the lake fleet of Ore carrying vessels is not of sufficient size to move 20,000,000 tons of Ore in a season. This claim upon investigation seems to be ill founded. Recent carefully compiled estimates show that whereas vessels capable of moving almost 18,000,000 tons of Ore are already in the hands of the Ore companies, there are still unchartered vessels having an aggregate capacity of 2,500,000 tons. Moreover, new facilities for loading and unloading Ore are being

provided at both the upper and lower lake ports. Docks are being enlarged, new machinery installed, and more cars and locomotives provided. In short, it is apparent that it will be as easy to handle next year 18,500,000 or 19,000,000 tons of Ore as it has been to handle 17,000,000 tons this year, and if the rail shipments are as heavy this season as last the total output of the Lake Superior region for 1899 will be 17,500,000 tons.

Pig Iron.—The past week has been devoid of development beyond a strengthening in all lines, which has in some instances resulted in advances in prices. No. 2 Foundry is still obtainable for delivery during the first half of next year at \$22.50, but No. 1 Foundry can no longer be quoted at \$23, and sales have been made during the past few days at \$23.50. Some sales of Iron have been made during the past week for immediate delivery, or what amounts to the same thing, delivery during November and December. Several lots, ranging from 50 to 100 tons, were disposed of at the rate of \$25 for No. 1 Foundry and \$24.50 for Foundry No. 2. The lots upon which these prices were realized do not represent the holdings of speculators, but simply came into the market as a result of the efforts of furnaces to scrape together lots of a car or two of Iron to oblige some regular customer who was in hard straits. There is understood to be a little spot delivery Iron still held for speculative purposes, but the quantity must be small. The Bessemer Association is practically sold up for the first six months of 1900, and any further transactions will be for quantities of insignificant size. Indeed the market on all grades is pretty well cleaned up for the first quarter of next year, and almost all recent sales either cover the first half or else stipulate delivery commencing in March or April and running up to the opening of the third quarter. Lake Superior Charcoal is quoted nominally at \$24.50 at the furnace and Gray Forge at \$21.50 in the Valley. The sales of Southern Irons in this territory continue extremely light. The car famine, which has caused trouble for several weeks past, is still to be reckoned with, and some furnacemen are having no little difficulty in getting raw material forward.

Finished Material.—While the market can hardly be said to have been active it has been characterized throughout the week by lively inquiry. One of the most important sales of the week was that of about 1000 tons of Rails for frogs and crossings. Sales of several hundred tons of Structural Material for building purposes are also reported. A feature of the week has been the falling off in the demand for Galvanized Sheets, as a result possibly of the expiration of the options on the mills. Dealers have not changed prices of material from stock, but quotations from mill show a drop of about 5 per cent.

Old Material.—The demand continues good, and the supply adequate. There has been practically no change whatever in prices, although a slight fluctuation both up and down, regulated by the demand, has been noticeable. All the prevailing quotations may, however, be taken as firm, and prices are likely to remain virtually stationary for another week.

St. Louis. (By Telegraph.)

Office of *The Iron Age*, 512 Commercial Building, }
ST. LOUIS, November 15, 1899. }

Pig Iron.—The continued drain on an increasing production, as shown by the *The Iron Age* monthly statistics for November, leaves no room to doubt the country's prosperity. It shows that there is approximately but three days' supply in furnace and warrant yards. One year ago the furnace stocks alone were equal to about 15 days' consumption at that time. A comfortable tonnage has been entered up by furnace representatives this week, and from points well distributed. There is a demand all the time from belated people, and considerable inquiry is seen still for early delivery next year. It must be borne in mind that no combination or agreement exists as to the selling prices of Pig Iron. The demand is entirely responsible for increased prices. No weakening in price is heard of. In fact, it would seem that consumers on all hands are stiffening in their views of the good trade 1900 will bring, and in this respect they may exceed even the sanguine views held by furnace people themselves. There is still close figuring on specifications for Castings and good customers, a class of trade always in demand, are given the benefit of low cost Iron. The tendency, of course, is to get selling prices of foundry work more in proportion to the market prices of Pig Iron. The Coke situation, coupled with shortage of cars, shows no decided improvement. It is said that Coke prices will be advanced. The only advance noted this week is one of 25c. on Southern No. 2 Foundry and No. 2 Soft, which is now quoted at \$21.50 to \$21.75. We quote, f.o.b. cars, St. Louis.

Southern, No. 1 Foundry.....	\$22.25 to \$22.50
Southern, No. 2 Foundry.....	21.50 to 21.75
Southern, No. 3 Foundry.....	20.25 to 20.50
No. 1 Soft.....	22.25 to 22.50
No. 2 Soft.....	21.50 to 21.75
Gray Forge.....	20.00 to 20.25

Bars.—Trade in Bar Iron is reported on the increase, and orders are coming in faster. It is stated that the general volume of business now in sight tends to an increase in prices. Mill quotations to-day range from 2.35c. to 2.50c., half extras, for carload lots, East St. Louis, but on straight sizes and no delivery this side of 1900. Where assortments must be made up an advance is asked. Jobbers in filling in orders for odd sizes have to pay an advance on these prices. Out of St. Louis stock 2.75c. to 2.90c., full extras, for Iron, is asked. A new classification, made November 10, on Soft and Special Steel, has been adopted and put into effect. Some changes have been made which can best be followed by an examination of the classification in detail. Soft Steel Bars range from 2.50c. to 2.75c., half extras, in carload lots, but no quick deliveries are likely to be had. Jobbers' price is 3c., full extras.

Rails and Track Fastening.—A regular trade is moving, and, except for Track Bolts, no change in price is noted. We quote: Splice Bars, Steel, 2.55c.; Iron, 3c. to 3.50c.; Track Bolts, with Square Nuts, are now 3.80c.; with Hexagon Nuts, 3.95c.; Spikes, 2.85c.; Steel Links and Pins, 3.20c.

Pig Lead.—The market lacks snap, and but little doing. Practically no change in price, although persistent efforts seem to have been made to break the market. Soft Missouri is salable at 4.45c., and Chemical at 4.47½c. Lead Ore has fallen back again 50c., and sold at \$26.50 per 1000 lbs.

Spelter.—This metal is getting into a more demoralized state each day. In a number of instances the past few days smelters offers to sell at 4.50c., St. Louis, were turned down, and a 4.45c. figure also refused. There is nothing to indicate that further declines will not take place. Zinc Ore was openly reported at a top price of \$35 per ton, but from an entirely reliable source private advice comes that an average of \$30 was had for a line of the higher assay grades. Deplorable as is the situation, the next week may record a still sharper drop.

Pittsburgh.

Office of *The Iron Age*, Hamilton Building, {
PITTSBURGH, November 15, 1899. {
(By Telegraph.)

Pig Iron.—There has been nothing done in Bessemer Pig in the past week of any consequence. The situation is exceedingly strong and Bessemer Iron for next year is held at \$23.50 to \$23.75, Valley furnace, and \$24 to \$24.25, Valley, for this year. There is a good deal of inquiry for Gray Forge, and the market is strong. Foundry Iron is somewhat quiet. We quote: Bessemer Pig, \$23.50 to \$23.75, Valley furnace; Gray Forge, \$20.50, Valley furnace; No. 2 Foundry, \$22.75 to \$23; Gray Forge, \$21 to \$21.25; Bessemer, \$24.50 to \$24.75, for this year, all f.o.b. Pittsburgh. We note a sale of 2500 tons of Malleable Bessemer, Phosphorus running up to 0.18 to 0.20 per cent., at \$23.25, Valley furnace, and 2500 tons of Standard Bessemer for next year at \$24, Valley furnace.

Steel.—The market is extremely quiet, but it is reported that several large lots of Steel are under negotiation. We quote Bessemer Billets at \$36 to \$37, depending on the order and deliveries wanted.

Sheet Bars.—There is nothing doing. We quote nominally at \$36, Pittsburgh.

Spelter.—The market is very weak, and we quote prime Western grades at 4.75c., Pittsburgh. It is likely this price would be shaded on a firm offer.

(By Mail.)

The effect of the large combinations organized this year in the Iron and Steel trades is already being felt in the direction that prices are being held up very much better than they would have been had it not been that these large consolidations were in effect. On certain lines of Finished Material demand is light and prices weak, and yet the decline has been gradual. Two or three years ago with a condition such as we have now, there would probably have been a panic in prices on certain lines of material. As it is the Iron market is strong from the standpoint of Pig Iron and Billets, with the

exception of Plates, Sheets, Skelp and one or two other lines on which mills are reasonably well caught up on deliveries, and are anxious for tonnage. It was generally expected that there would be a falling off in demand and possibly receding prices during November, and while this has come it is probably not as great as expected. Taken as a whole the market is fairly satisfactory, but there is no denying the fact that there is a good deal of uneasiness over the money situation. Should this improve, it will have a very beneficial effect on the Iron market. With the large contracts made for Coke, Pig Iron, Billets and Rails for the first half of the year, and in some cases running all through the year, it would seem that there will be a heavy tonnage in first half at very profitable prices. Jobbers, whose stocks of goods are low are buying more freely, but the volume of tonnage is not as heavy by any means as it was in the summer months. The scarcity of cars continues, but the situation is slightly improved.

Ferromanganese.—Domestic Ferro is scarce, and for small lots for spot shipment as high as \$125 is being quoted. For large lots we quote \$100 a ton, delivered.

Structural Material.—No very large jobs have recently been placed, but there is a good run of small orders which foot up considerable tonnage. As far as local mills are concerned, the situation could hardly be better, as they are filled up for the next two or three months. Small lots of stock Beams for prompt shipment are being sold at 2.50c. to 3c., depending on the order. We quote: Beams and Channels, 15-inch and under, 2.25c.; 18, 20 and 24 inch, 2.35c.; Angles, 3-inch and up to 6 x 6, 2.25c.; Angles, under 3-inch, 2.50c.; Tees, 3-inch and larger, 2.30c.; under 3-inch, 2.50c.; Zees, 3-inch and larger, 2.25c.; Grooved Rolled Plates, 2.75c., Pittsburgh.

Plates.—The rush work for the Plate mills is pretty well over, but there is a good steady demand, with some recession in prices. As noted last week, a good deal of work will soon stop, and this will interfere very materially with consumption. A number of small Plate mills throughout the country that have recently started up, and can only roll limited sizes, say up to 48 or 52 inches wide, are scarce of work and naming low prices to get tonnage. Some tonnage of this kind has recently been placed for delivery into next year at 2.50c. and under. Several local mills are holding Tank, ¼-inch and heavier, at 2.75c. a ton. We note a sale of Plates the other day at 2.90c., deliveries being made inside of a week. This, however, is higher than the general market. We quote Tank, ¼-inch and heavier, at 2.50c. to 2.75c., the lower price being for Plates up to 48 and 52 inches wide, and for delivery in the next three or four months. Shell is from 2.60c. to 2.75c.; Flange, 2.70c. to 2.80c.; Marine, 2.80c. to 2.90c.; Fire Box, 3c. to 3.75c., all f.o.b. makers' mill. It should be noted that the lower prices quoted are not being made by all the mills.

Sheets.—The Sheet trade continues quiet, and there is a good deal of unevenness in prices. Some mills, who have low priced Sheet Bars, and are in need of tonnage, are quoting Sheets \$3 to \$4 a ton lower than other mills. It has been figured out that with Sheet Bars at \$36, Pittsburgh, there is very little profit in selling No. 28 at 3c. to 3.10c. A meeting of the Executive Committee of the Sheet Association was held in Pittsburgh last week, and some matters of vital importance to the trade were brought up. It is not unlikely that the Sheet combination may be taken up again, but on somewhat different lines from those originally proposed. It is realized that action of some kind is needed to put the Sheet trade on a better basis. We quote No. 27 Black Sheets, Box Annealed, one pass through cold rolls, at 2.95c. to 3c.; No. 28, 3c. to 3.05c. It should be noted that some mills are quoting much higher prices, while we hear in a few instances of slightly lower prices. The size of the order and the deliveries have a good deal to do with the fixing of the price. Galvanized Sheets continue low, but there is considerable tonnage moving. We quote at 75 per cent. off, 15c. freight in carload lots, but in exceptional cases, and for very desirable orders, the price has been slightly shaded.

Bars.—As a result of the meeting of Iron and Steel Bar mills held in Pittsburgh recently, a new classification has been adopted, which will be found in full in another part of this issue. The market on Iron Bars is firmer, and from 2.20c. to 2.25c., Valley mill, is being quoted on Common Iron Bars, equal to 2.25c. to 2.30c., f.o.b. Pittsburgh. Local mills are filled up for the next three or four months, and are holding both Iron and Steel Bars at 2.50c., at mill. We quote Common Iron Bars at 2.25c. to 2.30c.; Refined Iron Bars, 2.50c.; Steel Bars, 2.25c. to 2.30c. for outside mills, and 2.50c. by local mills, all f.o.b. Pittsburgh; terms, net cash 30 days.

Merchant Steel.—A new classification has been adopted on Spring, Toe Calk and Tire Steel, which will be found elsewhere in this issue. There is a fair tonnage

moving, but not nearly as heavy as some time ago. A few contracts continue to be placed, but most of the tonnage now being entered by the mills is for small lots. Prices are fairly strong, and we quote: Toe Calk, 2.75c. to 3c.; Tire, 2.75c.; Open Hearth Spring, 3.25c. to 3.50c.; Plow Slabs, 3-16 and heavier, 2.75c. to 3c.; Bessemer Machinery, 2.75c. to 3c.; Sleigh Shoe, 2.75c. to 3c.; Cutter Shoes, tapered and bent, 3.75c. to 4c.; Cant Hook Steel, Open Hearth, 4c. to 4.25c.; Crucible, 5c. to 5.25c.; Tool Steel, 7c. and upward, depending on quality. Terms, net cash 30 days. The lower prices are for carload lots, and the higher prices for small lots.

Rails. — We quote \$35 to \$36, depending on quantity. It is claimed that the Rail tonnage now booked is considerably larger than generally supposed.

Skelp. — The market continues very quiet, and prices weak. We quote Grooved Iron and Steel Skelp at 2c., and Sheared at 2.40c., delivered at buyer's mill. It is stated that these prices have been slightly shaded recently.

Pipes and Tubes. — We are advised that the demand for Tubular goods thus far in November has been better than in October. Prices fixed by the mills are being rigidly held, but jobbers in certain sections, who have stocks of Pipe bought at lower prices, are shading to some extent. We quote Black and Galvanized Merchant Pipe at 50 two 10's, delivered, in carload lots. Demand for Oil Well Casing is better, and the market is very strong. We quote Screw and Socket Joint Weld Casing, 37½ per cent.; Inserted Joint, 32½ per cent., with an optional 5 per cent. to dealers. The Boiler Tube market is very strong, and demand is good. We quote: 1¼-inch and 1½-inch Iron, 40 per cent.; Steel, 40 per cent.; 1¾ to 2½ inch Iron, 50 per cent.; Steel, 55 per cent.; 2¾-inch and larger Iron, 52½ per cent.; Steel, 55 per cent., with an extra 5 per cent. in carloads; less than carloads, f.o.b. maker's mill, Pittsburgh, while carloads are delivered within certain specified territory.

Connellsville Coke. — Last week, out of 19,109 ovens in the Connellsville region, 13,234 were active and 875 idle, the production being 193,062 tons. The car supply is reported to be slightly better, but still very unsatisfactory. We can state that contracts for standard Connellsville Furnace Coke, running all through next year, have been made at a price slightly higher than \$2.50 at oven. For the first three or four months of next year, as high as \$3 a ton has been paid for Furnace Coke. Foundry Coke is selling from \$2.75 to \$3 a ton, and to casual buyers that may want a few cars right away, as high as \$3.25 a ton has been obtained.

New York.

Office of *The Iron Age*, 232-238 William street, {
NEW YORK, November 15, 1899. }

Pig Iron. — Some good inquiries are in the market from large concerns who had not yet covered for the first half of 1900. We note a sale of about 5000 tons, at private terms, to a large consumer. Prices are as follows: Lehigh and Schuylkill Irons, for 1900 delivery, No. 1 Foundry, \$25 to \$25.25; No. 2 X, \$23.75 to \$24; No. 2 Plain, \$22.25 to \$22.75, and Gray Forge, \$19.75 to \$20. Southern brands are quoted; No. 1 Foundry, \$24 to \$24.50; No. 2 Foundry, \$22.25 to \$22.50; No. 1 Soft, \$22 to \$22.25; No. 2 Soft, \$21 to \$21.25; No. 3 Foundry, \$20.75 to \$21.75, and Gray Forge, \$20.25 to \$20.50.

Cast Iron Pipe. — The market is quiet and easier. The shops are now running chiefly with stock, as is usual at this season of the year. It must be noted, however, that this has begun considerably later this year than formerly.

Steel Rails. — Eastern mills report only light sales. It is stated that a large block of Girder Rails has been sold to go to Glasgow, Scotland. We continue to quote \$35 to \$37 for Standard Sections, 2.40c. to 2.50c. for Angle Bars and 2.65c. to 2.75c. for Spikes.

Finished Iron and Steel. — The week has been a quiet one, so far as new business in Structural Material is concerned. It is a fact, however, that a good deal of figuring is going on, and that much work for next season is in preparation in architects' offices. The Brooklyn Navy Yard contract has been awarded. We quote: Beams, 2.40c. to 2.50c.; Angles, 2.40c. to 2.45c.; Universal Mill Plates, 2.65c. to 2.75c.; Tees, 2.40c. to 2.45c.; Channels, 2.40c. to 2.50c.; Steel Plates are 2.90c. to 3.10c. for Tank, 3.10c. to 3.25c. for Shell, 3.30c. to 3.40c. for Flange, 3.40c. to 3.55c. for Fire Box, 3.75c. to 4c. for Locomotive Fire Box, on dock. Charcoal Iron Plates are 3.15c. for C. H. No. 1, 3.65c. for Flange and 4.15c. for Fire Box. Refined Bars are 2.20c. to 2.25c. and Common Bars are 2c. to 2.10c., on dock. Soft Steel Bars, 2.50c. to 2.55c.; Hoops, 2.70c. to 2.75c., base, delivered.

Merchant Pipe. — The market continues strong. Considerable inquiries are at hand for export to the East. The mills are now working off rapidly a good deal of export business closed during the summer months. Quotations on Merchant Pipe in carloads are 50, 10 and 10 per cent. discount, delivered and in less than carloads 50 and 10 per cent., f.o.b. maker's mill. On Casing the figures are: For carload lots, S. and S. Joint, 37½ per cent., and Inserted Joint, 32½ per cent.; for less than carload lots, S. and S. Joint, 32½ per cent., and for Inserted Joint, 27½ per cent., less 5 per cent. to jobbers, the prices for carload lots being delivered and for less than carload lots f.o.b. mill. On Boiler Tubes, 1¾ to 2½ inch, the prices are 55 per cent. off on Steel and 50 per cent. on Iron; for Boiler Tubes 2¾-inch and larger, 55 per cent. on Steel and 52½ per cent. on Iron, all subject to 5 per cent. on car lots, the prices for carload lots being delivered and on less than carload lots f.o.b. mill.

Metal Market.

Office of *The Iron Age*, 232-238 William street, {
NEW YORK, November 15, 1899. }

Pig Tin. — The market is demoralized and unsettled. Spot to-day closed 26¼c. bid and 27c. asked. November was 26¼c. bid and 26½c. asked; December 26c. bid and 26.20c. asked. The premium on spot is, in consequence of concentration of spot stock, practically in one hand. The London market declined sharply, reaching the lowest to-day, when £118 was quoted. There was a recovery at the close, however, and the cable came £119 10s. for spot and future. It will be recalled that for some months past very little confidence was shown in the "bull" movement which started in the latter part of June. At that time the position was such that the market without manipulation would have settled down to a sound basis, but an element entered the market and pushed prices skyward in their wild gamble. As long as buying was brisk prices could be advanced, but when the Dutch producers made their first announcement to the effect that they would sell more Tin than they had been in the habit of selling the market hesitated, and with the falling off of consumption here support was taken from under the London market and prices fell by their own weight. The last week has especially emphasized this through the free offering from the Straits, where the Chinese speculators offered the stock which they had held back as long as the market was on an upward trend. The decline in London from the high price which prevailed on September 28 now amounts to £29. In New York the decline amounts to 6c. per lb.

Copper. — The market is flat and prices are nominally unchanged. Lake Superior Ingot is quoted 17c., Electrolytic Cakes, Wire Bars and Ingots, as well as Casting, are quoted 16¾c. to 17c. The London market to-day is £73 5s. for spot and £72 5s. for three months' futures. The wide discount is worth noting. Best Selected is down to £78 15s., which is 15 shillings below last week's figure. The report which was circulated in the trade, and which we printed several weeks ago, regarding the selling of a large block by Calumet & Hecla at 17c., is now confirmed. It is given out that the amount sold was about 16,000,000 lbs. Other reports state that the amount was a little larger, but as large as the quantity may have been, it does not represent more than what we have to export in a single month. We mention this as it is stated that most of the sales of this deal were for export extending over for some months. Production is still increasing and the month of October shows an increase of 2800 tons over the same month of last year.

Pig Lead. — There is no change either as to the condition of the market or prices. The American Smelting & Refining Company quote 4.57½c. to 4.60c. for desilverized, New York, and 4.50c., St. Louis. Private advices state that St. Louis can be had as low as 4.45c. Another slight decline has marked the London market, the closing price to-day is 17 pounds, with an easing tendency.

Spelter. — Has been weakening, and it is said that there are numerous sellers in this market at 4.65c. for spot and futures. Bids, it is said, do not reach above 4.55c. The London market is easy at a decline of 5 shillings, the closing price to-day being £21. While St. Louis is nominally 4.50c., offers at 4.40c. could not be placed. Joplin is on the decline, and private telegraphed reports place the price at \$33 for best grade Ore.

Antimony. — There is no change, Cookson's being quoted 10½c. to 11c., and Hallet's 9½c.

Nickel. — Is strong, and stationary at the advanced price of 40c. to 45c., according to quantity and delivery.

Tin Plates. — No change has been made in prices, and demand remains much the same. The American Tin Plate Company's prices are \$4.82½ to \$4.87½ per box for 100-lb. Cokes, New York.

New Standard Steel Classifications.

A meeting of manufacturers of iron bars, bands and other shapes was held in the Duquesne Club, Pittsburgh, recently, at which it was decided to have a standard classification on flat bars, heavy bands, light bars and bands and other shapes of bar iron and steel. The concerns represented at the meeting were: Jones & Laughlins, Limited, Pittsburgh; Carnegie Steel Company, Limited, Pittsburgh; Gautier Department the Cambria Steel Company, Johnstown, Pa.; American Steel Hoop Company, Pittsburgh; Park Steel Company, Pittsburgh; National Steel Company, Chicago, and Federal Steel Company, Chicago. A committee was appointed to revise the extras, of which Willis L. King of Jones & Laughlins, Limited, was made chairman. This committee has been at work for some days and as a result of its efforts a standard steel classification was adopted, which went into effect on November 10, 1899. Terms of payment are net cash in 30 days from date of shipment. In full the classification is as follows:

Standard Steel Classification.

Adopted November 10, 1899.

Flat Bars and Heavy Bands.

1	to 6	inches x	3-8	to 1	inch.....	Base.
1	to 6	inches x	1-4	and	5-16 inch.....	2-10 c. extra
11-16	to 15-16	inch x	3-8	to	3-4 inch.....	4-10 c. extra
11-16	to 15-16	inch x	1-4	and	5-16 inch.....	5-10 c. extra
9-16	and 5-8	inch x	3-8	to	1-2 inch.....	5-10 c. extra
9-16	and 5-8	inch x	1-4	and	5-16 inch.....	7-10 c. extra
1-2	inch	x	3-8	and	7-16 inch.....	9-10 c. extra
1-2	inch	x	1-4	and	5-16 inch.....	11-10 c. extra
7-16	inch	x	3-8	inch.....	1	c. extra
7-16	inch	x	1-4	and	5-16 inch.....	12-10 c. extra
3-8	inch	x	1-4	and	5-16 inch.....	15-10 c. extra
1	1-8	to 6	inches x	11-16	to 13-16 inches.....	1-10 c. extra
1	1-8	to 6	inches x	11-4	to 11-2 inches.....	2-10 c. extra
1	3-4	to 6	inches x	15-8	to 23-4 inches.....	3-10 c. extra
3	1-8	to 6	inches x	3	to 4 inches.....	4-10 c. extra

For intermediate sizes, the next highest extra to be charged.

Light Bars and Bands.

1	1-2	to 6	inches	x Nos. 7, 8, 9, and 3-16	inch.	4-10 c. extra
1	1-2	to 6	inches	x Nos. 10, 11, 12, and 1-8	inch.	6-10 c. extra
1	1	to 1	7-16	inches x Nos. 7, 8, 9, and 3-16	inch.	5-10 c. extra
1	1	to 1	7-16	inches x Nos. 10, 11, 12, and 1-8	inch.	7-10 c. extra
13-16	to 15-16	inch	x Nos. 7, 8, 9, and 3-16	inch.	7-10 c. extra	
13-16	to 15-16	inch	x Nos. 10, 11, 12, and 1-8	inch.	8-10 c. extra	
11-16	and	3-4	inch	x Nos. 7, 8, 9, and 3-16	inch.	1 c. extra
11-16	and	3-4	inch	x Nos. 10, 11, 12, and 1-8	inch.	12-10 c. extra
9-16	and	5-8	inch	x Nos. 7, 8, 9, and 3-16	inch.	12-10 c. extra
9-16	and	5-8	inch	x Nos. 10, 11, 12, and 1-8	inch.	13-10 c. extra
1-2	inch		x Nos. 7, 8, 9, and 3-16	inch.	13-10 c. extra	
1-2	inch		x Nos. 10, 11, 12, and 1-8	inch.	15-10 c. extra	
7-16	inch		x Nos. 7, 8, 9, and 3-16	inch.	18-10 c. extra	
7-16	inch		x Nos. 10, 11, 12, and 1-8	inch.	21-10 c. extra	
3-8	inch		x Nos. 7, 8, 9, and 3-16	inch.	19-10 c. extra	
3-8	inch		x Nos. 10, 11, 12, and 1-8	inch.	24-10 c. extra	

For intermediate sizes, the next highest extra to be charged.

Rounds and Squares.

3-4	to 3	inch	Base.
5-8	to 11-16	inch	1-10 c. extra
1-2	to 9-16	inch	2-10 c. extra
7-16	inch		4-10 c. extra
3-8	inch		5-10 c. extra
5-16	inch		6-10 c. extra
1-4	and 9-32	inch	7-10 c. extra
7-32	inch		1 c. extra
3-16	inch		2 c. extra
3	1-16	to 3 1-2 inches	3-10 c. extra
3	9-16	to 4 inches	5-10 c. extra
4	1-16	to 4 1-2 inches	6-10 c. extra
4	9-16	to 5 inches	8-10 c. extra
5	1-8	to 5 1-2 inches	1 c. extra
5	5-8	to 6 inches	15-10 c. extra
6	1-8	to 6 1-2 inches	2 c. extra
6	5-8	to 7 inches	25-10 c. extra

For intermediate sizes, the next highest extra to be charged.

Bars up to 5 inches diameter over 24 feet long, and bars larger than 5 inches diameter over 18 feet long, subject to special prices.

Machine straightening and centering, 2-10 c. extra.

Ovals.

7-8	to 1	1-4	inches		4-10 c. extra
3-4	to 13-16	inch			5-10 c. extra
5-8	to 11-16	inch			6-10 c. extra
1-2	to 9-16	inch			8-10 c. extra
3-8	to 7-16	inch			1 c. extra

For intermediate sizes, the next highest extra to be charged.

Half Ovals and Half Rounds.

7-8	to 1	1-4	inches		5-10 c. extra
3-4	to 13-16	inch			6-10 c. extra
5-8	to 11-16	inch			7-10 c. extra
1-2	to 9-16	inch			9-10 c. extra
3-8	to 7-16	inch			1 1-10 c. extra

For intermediate sizes, the next highest extra to be charged.

Extras for Cutting Flats, Rounds, Squares, Ovals, Half Ovals, and Half Rounds to Specified Lengths.

Hot sawing or shearing, 24 inches and longer bars	1-10 c. extra
Hot sawing or shearing, 12 to 24 inches	2-10 c. extra
Hot shearing, 6 to 12 inches	3-10 c. extra
Machine cutting, specified lengths, above 24 inches	2-10 c. extra
Machine cutting, specified lengths, 12 to 24 inches	4-10 c. extra

Machine cutting, to specified lengths, less than 12 inches, according to contract, but not less than 6-10 c. extra on each size.

No charge for shear cutting to multiple lengths of 12 inches and under.

All sizes not enumerated subject to special arrangement.

Round Spring Steel.—Pernot Open Hearth.

5-8	to 1	1-2	inches		Base.
1-2	to 9-16	inch			2-10 c. extra
3-8	to 7-16	inch			5-10 c. extra
5-16	inch				1 c. extra
1-4	inch				15-10 c. extra

Spirals cut to lengths, 1-10 c. per pound extra.

Spirals cut to lengths and tapered, 3-10 c. per pound extra.

Flat Spring Steel.—Pernot Open-Hearth.

1	1-4	to 6	inches x	Nos. 3 to 1-2	inch	Base.
1	and 1	1-8	inches x	Nos. 1 to 4		2-10 c. extra
1	to 3	inches x	Nos. 5 to 7			5-10 c. extra
3-4	and 15-16	inch x	Nos. 1 to 7			5-10 c. extra
3-8	to 11-16	inch x	Nos. 1 to 7			1 c. extra
3-4	to 3	inches x	Nos. 8 to 10			1 c. extra
3-4	to 3	inches x	Nos. 11 to 16			1 5-10 c. extra
3-4	to 3	inches x	Nos. 17 to 20			2 2-10 c. extra
3-8	to 5-8	inch x	Nos. 10 to 16			4 c. extra
3-8	to 5-8	inch x	Nos. 17 to 20			5 c. extra
3-8	to 5-8	inch x	Nos. 21 to 24			6 c. extra

Cut to length, 24 inches and over, 1-10 c. per pound extra, and under, by special contract.

Toe Calk Steel

1-2	inch x	3-8	inch and over		Base.
3-16	inch x	1-4	to 1-2	inch, inclusive	2 c. extra
3-16	inch x	5-8	to 1	inch, inclusive	1 c. extra
1-4	inch x	5-16	to 3-8	inch, inclusive	1 1-2 c. extra
1-4	inch x	7-16	to 1	inch, inclusive	3-4 c. extra
5-16	inch x	3-8	to 7-16	inch, inclusive	3-4 c. extra
5-16	inch x	1-2	to 1	inch, inclusive	1-2 c. extra
3-8	inch x	7-16	inch		3-4 c. extra
3-8	inch square				3-4 c. extra
5-16	inch square				1 c. extra
1-4	inch square				2 c. extra

Put up in bundles of 50 pounds or 100 pounds each.

Steel Tire.

All sizes 3-4 inch x 3-16 inch and larger, Base.

Extra on sizes less than 3-4 inch wide and less than 3-16 thick as per Bar Steel Classification.

Standard lengths, 12 1-2 and 13 1-2 feet.

PERSONAL.

A. Otto Diechmann of the firm of Gustav Diechmann & Sohn, importers of machine tools, Berlin, arrived in this country last week.

William S. Accles, mechanical engineer, M.I.M.E., manager of the English branch of the Niles Tool Works Company, is in New York. He arrived last week and intends to return within the next two weeks.

G. E. Davis, manager of the Dubuque Machine Concern, Dubuque, Iowa, reports the sale of one of their Boss power hammers to a machinery house in Sweden. Inquiries have also been received from England, Germany and Tasmania.

C. S. Knight, vice-president and general manager of the Siemens & Halske Company of America, has resigned and will go to New York to take up other work for the syndicate which controls the Siemens & Halske, Electric Vehicle and other companies. Mr. Knight will be succeeded by O. S. Lyford, Jr., formerly electrical engineer of the Siemens & Halske Company.

On Thursday last William Barclay Parsons of New York delivered a lecture before the Engineers' Club of New York on his observations while in charge of a survey for a railroad from Hankow to Canton, China, a distance of some 1000 miles. It was illustrated by a series of interesting lantern slides.

Edward L. Leeds, European manager of the Brown Hoisting & Conveying Company of Cleveland and New York, has just arrived in this country. Owing to the rush of business on the other side his stay in this country will be a short one.

S. N. Chauvenet has resigned as manager of the Virginia Portland Cement Company to accept the post of manager of the Sheridan furnaces at Sheridan, Pa.

At a special meeting E. J. Berwind of New York was elected a director of the Virginia Iron, Coal & Coke Company.

John D. Kennedy, who has managed the Sheridan Iron Works successfully for the past two years, has resigned to accept the post of manager of the Musconetcong Iron Works at Stanhope, N. J.

A. P. Head has been appointed joint managing director with J. E. Touch of the Otis Steel Company, Cleveland, Ohio. One or both are expected to visit the works next month.

Alex. Post of Hagen, Germany, spent several days last week the guest of Henry W. Hartman of the Hartman Mfg. Works and other large interests at Ellwood, Pa. Mr. Post left for Geneva, Italy, November 11.

QUOTATIONS OF IRON STOCKS DURING THE WEEK ENDING NOVEMBER 15, 1899.

Cap'l Issued.		Sales.	Thursday.	Friday.	Saturday.	Monday.	Tuesday.	Wednesday
\$29,000,000	Am. Car & Foundry, Common..	3,053	17 -17½	-16½	16½-16½	16½-16½	16½-17	16½-16½
29,000,000	Am. Car & F'y, Pref. (7% Non-Cu.)	3,057	62½-63	-62	-61	.....	61½-62½	61 -61½
19,000,000	Am. Steel Hoop, Common.....	16,100	44 -45½	43½-44½	43 -44	42½-44½	43½-44	42½-43
14,000,000	Am. Steel Hoop, Pref. (7% Cu.)	3,435	82½-83½	82½-83½	82½	82½	82½-82½	.....
50,000,000	Am. S. & W., Common.....	66,145	47½-50	47½-48½	47 -48	46½-48	47½-48½	46½-48½
40,000,000	Am. S. & W., Pref. (7% Cu.)....	4,205	93½-94½	93½-94	93½-93½	93 -93½	93½-93½	93½-93½
28,000,000	Am. Tin Plate, Common, N. Y..	2,060	33½-34	33 -33½	31½-33	31½-32½	32½-32½	32½-33½
18,000,000	Am. Tin Plate, Pref., N. Y. (7% Cu.)	1,868	82½-83½	82½	.....	82½	83 -83½	82½-83½
7,500,000	Bethlehem Iron.....	350	60 -60½	.....	.....	.....	59½-60	-59½
15,000,000	Beth. Steel, Par \$50, \$1 paid in.	2,720	18½-19½	18½-18½	.....	18½-18½	-19	-19
7,974,550	Cambria Iron, Phila.....	496	44 -44½	44 -44½	44	43½-44	43½-44	-44
16,000,000	Cambria, Steel**.....	18,425	20½-21	20 -20½	20 -20½	19½-20½	20 -20½	19½-20½
11,000,000	Col. Fuel and Iron.....	11,850	54½-55½	52½-54½	52½-53½	52½-53½	52½-54	51½-52½
46,484,300	Federal Steel, Common.....	79,150	56½-59	55½-57½	55½-56½	55½-56½	55½-57½	55 -56½
53,253,500	Federal Steel, Pref. (6% Non-Cu.)	7,790	78½-79½	78½-79	78½-78½	78 -78½	78½-79	78½-78½
32,000,000	National Steel, Common, N. Y..	6,645	48 -49½	47½-48	46½-47½	46½-47½	46½-47	46½-49
27,000,000	Nat'l Steel, Pref., N. Y., (7% Cu.)	2,190	.....	94½-95	-94	93½-94½	.....	94½-95
5,000,000	Penna., Common, Phila.....	300	76 -77½	-76	.....	.....	.....	.....
1,500,000	Penna., Pref., Phila.....	.....	.....	.....	.....	.....	.....	.....
12,500,000	Pressed Steel, Common.....	1,735	57½-58	56½-57	55½-56	-55½	-55½	55 -55½
12,500,000	Pressed Steel, Pref. (7% Non-Cu.)	370	.....	.....	89 -89½	-89	.....	.....
27,352,000	Republic Iron & Steel, Common.	3,580	-24½	-24½	23½-24	24 -25	22½-25	.....
20,852,000	Repub. Iron & Steel, Pref. (7% Cu.)	1,540	70 -70½	69 -69½	68½-69	.....	69½-70	.....
20,000,000	Tennessee Coal and Iron.....	24,250	116½-118	116 -117½	110 -116½	112 -115	114½-116½	114 -115½
1,500,000	Warwick Iron & Steel, (par \$10)	541	.....	10½-11	.....	-10½	-10½	-10½

* Par \$50. ** \$1.50 per share paid in. + 6% guaranteed by Beth. Steel Co. Late Philadelphia sales by telegraph

Bonded Indebtedness: Am. S. & W., \$130,656; Am. Tin Plate, none; Am. Steel Hoop, none; Cambria Iron Co., \$2,000,000 6% debenture 20-year bonds, payable option 5 years, assumed by Cambria Steel Co.; Federal Steel Co., \$13,200,000 Illinois 5% \$7,417,000 E. J. R. R. 5% \$1,600,000 Johnson 6% \$6,732,000 D. & I. R. R. 5% \$1,000,000 2d D. & I. R. R. 6% \$10,000 land grant D. & I. R. R. 5% National Steel, \$2,561,000 6%; Tennessee C. I. & R. R. Co., \$8,387,000 6% \$1,114,000 7% \$1,000,000 7% cu. pref.; Pennsylvania Steel, \$1,000,000 Steelton 1st; \$2,000,000 Sparrow's Point 1st, \$4,000,000 consolidated, both plants; Bethlehem Iron, \$1,351,000 5% maturing 1907. Interest and principal guaranteed by Bethlehem Steel Co. Republic Iron & Steel, none; Warwick Iron & Steel, none. Colorado Fuel & Iron Co., Col. Fuel Co. Gen. Mort. 6% \$880,000; Col. Coal & Iron Con. Mort. 6% \$2,810,000; Col. Fuel & Iron Gen. Mort. 5% \$2,303,000. Also outstanding \$2,000,000 preferred stock with accumulated dividends of \$640,000 to June 30, 1899.

Iron and Industrial Stocks.

Under the pressure of adverse financial markets the majority of the steel stocks show little activity and are inclined to be heavy. Some of them are receiving only half hearted support. Intimations from semi-official sources relative to the enormous earnings, present and prospective, of a number of the issues are becoming more and more frequent and are accepted in trade circles as correct, since it is well understood that the profits must be very large indeed.

	Bid.	Asked.
International Silver, Common.....	14	14½
Otis Elevator, Common.....	29	30
Otis Elevator, Preferred.....	91	93
H. R. Worthington, Preferred.....	109	110
E. W. Bliss, Common.....	132	.....
E. W. Bliss, Preferred.....	125	.....
U. S. Projectile.....	95	100
International Pump, Common.....	18	20
International Pump, Preferred.....	69	71
Diamond State Steel.....	6½	6½
Tidewater Steel.....	13½	13½
Sloss & Sheffield Steel & Iron, Common.....	30	35
Sloss & Sheffield Steel & Iron, Preferred.....	43	76
National Tube, Subscriptions, Common.....	43	44
National Tube, Subscriptions, Preferred.....	93	94
American Bicycle Company, Common.....	26	.....
American Bicycle Company, Preferred.....	65	.....
American Bicycle Company, Bonds.....	90	91

The officials of the American Steel & Wire Company expect to list their stocks on the London Exchange.

The Pennsylvania Natural Gas Company of Pittsburgh have declared dividend No. 41, being five-eighths of 1 per cent, and an extra dividend of 20 cents a share, payable to stock of record November 1.

The Welsbach Commercial Company have declared a dividend of 1 per cent. on the preferred stock, payable December 9.

The Park Steel Company have declared a quarterly dividend of 1¼ per cent. on their preferred stock, payable December 1 to stock of record November 30. Books close November 18.

A semi-annual dividend of \$20 per share, or 4 per cent., has been declared by the Lowell Machine Shop of Lowell, Mass.

The first quarterly meeting of the directors of the Niles-Bement-Pond Company was held yesterday at the office of the company, 136 Liberty street. The treasurer reported, showing net earnings of the company for four months ending October 31 to be \$331,214.45. A quarterly dividend of 1½ per cent. on the preferred stock was declared, payable November 29.

Reports have been current to the effect that parties connected with the Empire Iron & Steel Company have been endeavoring to acquire control of the Thomas Iron Company of Hokendauqua, Pa. It is a fact that individual stockholders have been approached to name a price on their holdings, and that \$100 per share, par being \$50, has been asked by some of the interests. We understand that a good many of these negotiations are being conducted by intermediaries.

Tin has had a further decline. From the highest point at the close of September it has fallen 6 cents. Spelter has weakened further.

The New York Machinery Market.

Office of The Iron Age, 232-238 William street, }
NEW YORK, November 15, 1899. }

If there has been any change in the condition of business throughout the last week it has been a slight falling off. A number of machinery merchants and builders state that there has been a slight lull, but there are numerous others who assert that they have experienced no letting up. The consensus of the reports received would indicate, however, that things have not been quite as brisk as they were during the previous week. We have heard of no changes in prices. It is said that the great railroads have been a little backward this year in purchasing machinery for adding to their machine shop capacity. The large car builders, it was also expected, would enter the market for heavy supplies of machine tools, but as yet they have been practically unheard of in this respect. The New York representative of one of the largest Continental European machinery importing houses states that business has fallen off considerably during the last week. He states that the long deliveries named by American builders and the high prices have very much to do with this condition, but the main reason at present is a waiting policy which is being pursued by the European purchasers. This policy is accounted for by the fact that the industrial stocks, particularly in France and Germany, underwent heavy declines within the last two weeks, and prospective purchasers are consequently holding back and viewing the situation. There has been considerable said lately regarding several electrical plants which are to be and are being established in England. The mentioning of various operations contemplated by these concerns has led to some confusion. We are informed on excellent authority that three large plants will be erected. The first of these to enter the English field with American electrical materials was Dick, Kerr & Co., who are at present operating a plant for the building of small factory railways, coal handling, conveying machinery, &c. The new electrical institution which they are building will be located at Preston, Northern England. This plant will be entirely independent of their present works. At their electrical works they will manufacture apparatus according to the "Short System," and we are informed that Professor Short, together with several other American electricians, has identified himself with this company. Dick, Kerr & Co. purchased several hundred thousands of dollars' worth of machinery here for this plant about a year ago.

The new Westinghouse electric plant will be located at West Trafford, Manchester. This is the work which George Westinghouse, Jr., started. Arrangements are now being made for the purchase of machinery for the equipment of this plant.

At Rugby a new factory is being erected by the English Thomson-Houston interests. Machinery and equipment are now being purchased for this plant.

There have been numerous persistent rumors of late to the effect that a factory will be built at Berlin by the Buffalo Forge Company of Buffalo, N. Y. We are officially informed that these reports are not correct.

Daniel Schmidt, chief engineer for V. Lowener,

Copenhagen, Denmark, is in this country. He is in New England at present. It is said that he is studying American methods, and will soon design several plants to be erected in Northern Europe. He will purchase American equipment.

Chief Engineer Svalling, of the Government railroads of Copenhagen, is also in this country making purchases.

William S. Accles, English manager of the Niles Tool Works Company, and A. Otto Diechmann of the firm of Gustave Diechmann & Sohn of Berlin, are in New York. The latter company are the German agents for the Niles Tool Works Company.

In another column we publish a report of a meeting of the directors of the Niles-Bement-Pond Company, which was held at the main office of the company, 136 Liberty street. The company declared a dividend of 1½ per cent. on the preferred stock. The report of the treasurer showed that the earnings for the four months ending October 31 were \$331,214.45. The company have at present in their employ 3500 men, and all shops are running night and day.

The contract for the building to replace the old machine shop, destroyed by fire at the Brooklyn Navy Yard, was awarded to O'Brien Houlihan of Syracuse, N. Y. The bid accepted was \$331,000. No decision has been reached as yet as to the successful bidders for the machinery to equip this building.

Stone & Webster of Boston, who are ordering the equipment for the Seattle Electric Company, purchased their boilers from Thayer & Co., 39 and 41 Cortlandt street. Cahall boilers will be installed, aggregating 3000 horse-power. The plant will be for the operation of an electric street railway. We understand that no other materials for this plant have been ordered as yet. It is said that automatic stoking machines are now being negotiated for. Thayer & Co. were also awarded the boiler order in connection with the new Lexington & Boston Elevated Railway. Other materials for this plant are still to be ordered.

Announcement is made of the fact that the Lawrence Machine Company, manufacturers of centrifugal pumps, have opened local headquarters, under their own name, in charge of H. E. Maxfield, located at 39 and 41 Cortlandt street. Mr. Maxfield is sole representative for the Lawrence Machine Company, as all connections with their former representatives in this district have been severed. Mr. Maxfield is well known in the trade as having been connected with the Prindle Pump Company. He is a brother to Thomas C. Maxfield, New York manager of the Buffalo Forge Company.

The contract for the 1200 horse-power engine for the Holyoke Street Railway Company, Holyoke, Mass., was awarded to Hooven, Owens & Rentschler of 39 and 41 Cortlandt street. The Hamilton Corliss engine will be installed. An order for another engine of this type was received by the same company, to be installed in the plant of the Traders' Paper Company, Lockport, N. Y. This engine will be of 800 horse-power.

The contract for the forge shop which the Brooklyn Heights Railroad Company are to erect at their Fifty-second street station was awarded to the Buffalo Forge Company, 39 and 41 Cortlandt street. The equipment will consist of 16 heavy railroad forges, with underground blast and exhaust system. The Buffalo Forge Company also received an order from the Ingersoll-Sergeant Drill Company of Easton, Pa., for an exhaust system, to be operated in connection with a sand blast plant.

The American Impulse Water Wheel Company of 120 Liberty street received a large order for water wheels, to be shipped to Honolulu, and also an order for an electrical transmission plant, to be installed in Sweden.

The Chicago Pneumatic Tool Company, manufacturers of the Boyer pneumatic tools, scored an important victory last week in their patent litigation with the American Pneumatic Tool Company of New York. Between three and four years ago the American Company brought suit at New Haven, Conn., against a concern who were using one of the Boyer tools, and succeeded in obtaining a preliminary injunction on the strength of an old decision they had obtained sustaining their patent in a prior suit, which had not been strongly defended. Upon obtaining this preliminary injunction the American Company sent every concern using Boyer tools a notice of infringement, in which they claimed some \$2,000,000 damages against the users of Boyer tools. The Boyer people promptly took an appeal from the preliminary injunction order, and the order was reversed by the Court of Appeals at New York City. This was about three years ago, since which time the suit has been progressing toward a final hearing on its merits. It was argued at great length before Judge Townsend, in the United States Court at New Haven, last June, and has been held under advisement by the court until last week, when Judge Townsend handed down an opinion, holding with the Boyer people on every point, and declaring that the Boyer tools did not infringe the American Company's patent.

John W. Gates Before the Industrial Commission.

WASHINGTON, D. C., November 14, 1899.—The Industrial Commission to day gave a hearing to John W. Gates, chairman and managing director of the American Steel & Wire Company. The examination was devoted to the development of the conditions under which this corporation were organized, the character and extent of their output and the views of the witness as to the desirability and propriety of legislation in the interest of both producer and consumer. The hearing was one of the most interesting of the series involving iron and steel matters and the members of the commission were evidently much impressed with Mr. Gates' statements.

In reply to a general inquiry by Professor Jenks, who took the lead in the examination, the witness said that the American Steel & Wire Company were a corporation organized under the laws of the State of New Jersey and were engaged in various branches of the work of producing steel wire and its more highly finished products.

"We are owners of iron mines," said he, "miners of ore, owners of coal mines, miners of coal, manufacturers of coke, owners of Bessemer and open hearth furnaces, of which we have 17 either built or building, owners of 23 steel rod mills and of 30 wire mills. Our product is wire of every shape and kind used in America, including barbed wire for fencing, wire clothes line, wire for electrical purposes, wire nails and many other varieties. We are makers of from 55 to 60 per cent. of the rods which we use in our business and we buy from 40 to 45 per cent. in the open market. We are also large producers of copers, making two thirds of the output of the country."

As to the extent to which the company controlled the rod mills of the country the witness said that it was his information that there were five rod mills outside the combination, the American Steel & Wire Company producing from 75 to 80 per cent. of the rod output. In this connection he stated that the original American Steel & Wire Company of Illinois, prior to the formation of the combination, had an inactive tonnage of about 60 per cent. of the rod product of the country, but that they had no such proportion of the active tonnage. In explanation of this statement Mr. Gates said that the term "active tonnage" was applied to the product of mills that turned out about a certain product whether the prices were high or low and without regard to the special profits to be made by increasing or diminishing their product, while "inactive tonnage" represented simply the capacity of the plant when run under favorable conditions.

The Fluctuations in Prices.

Professor Jenks asked the witness to describe the trend of prices of the raw material consumed by the American Steel & Wire Company during the last three years, to which the witness replied that the price of iron ore in 1896 was based on a standard grade selling for \$4 per ton, other ores selling above and below in proportion to the value of their contents. In 1897 the price of the standard was \$2.75 and in the early part of 1899 it was \$2.80 to \$2.85, while more recently it ranged from \$2.90 to \$3.

"For 1900," said the witness, "we would be very glad to contract to pay \$5.50 for the same grade of ore we are buying this year for \$3. The entirely erroneous impression exists very generally that these prices are due to the combinations which have been effected in the iron and steel trade. There is no basis whatever for this impression. The real reason is that never before in the history of the industry have such extraordinary commercial conditions been combined at one time. Never before has the output of pig iron exceeded 11,000,000 tons and I think it has never gone beyond 10,000,000, while this year it will touch 13,000,000 tons. Never before has iron ore in the ground been worth more than a few cents per ton, while to-day a mine estimated to contain 1,000,000 tons would be worth \$2 a ton. It would have been hard to get 40 cents a ton for it two years ago. Never before have the miners of iron ore conserved their output as they are now doing. Heretofore they have simply sought to get out the largest amount possible without regard to demand, their sole idea being to keep in the business. The manufacturers have got to have the ore and they have got to have it transported, and these facts have forced up the price of ore and the price of transportation. Orders have been booked ahead for many months and there are no stocks on hand worth mentioning. These are facts which are well known by those who are interested in this industry and have no relation whatever to questions of combination."

Reverting to the direct interest of the American Steel & Wire Company in the iron mines the witness said that the combination controlled from one-seventh to one sixth of the iron ore in the Superior district, but that there were other very large ore producers, including the Oliver Mining Company, the Federal Steel Company, the National Steel Company, the Republic Iron & Steel Company and other small individual owners.

Lake Freights.

"Lake freight rates," continued the witness, "have a good deal to do with the cost of iron ore and it may interest the commission to know that within the past four years they have fluctuated from 45 cents to \$2, the extreme rates being due to special conditions, especially the very low rates. My figures are based upon the through rates from the head of Lake Superior to South Chicago. In 1895 the rate was established at about \$1, but before the close of the season \$1.75 was paid. In 1896 an effort was made to establish the rate at 75 cents, but there were many fluctuations during the year and some wild tonnage was chartered at 45 cents. In 1897 the rate ranged from 50 to 70 cents and in 1898 from 55 to 68 cents. During 1899 we have paid as low as 60 cents and as high as \$2, the fluctuations being due largely to special conditions. The American Steamship Line, of which I am president, has hauled ore during the year at both extremes, making one trip at 60 cents and another at \$2, the next at \$2, and the next at 60 cents again. While some of the gentlemen interested in the American Steamship Line are also interested in the American Steel & Wire Company it is an interesting fact that it has so happened that the steamship company have hauled none of the Steel & Wire Company's ore this year, but have hauled large quantities for the Carnegie Company, the Federal Steel Company, &c."

The witness was interrogated as to what determined the question as to whether an allied steamship company handled the ore of the manufacturers owning them or that of their rivals, to which the witness replied that the steamship company were managed as to all the details of their business by a general manager, who was given the widest latitude and who was told to get the most money he could out of his boats. If it had been more profitable to haul the ore of the American Steel & Wire Company and equally convenient to do so that product would have been carried instead of the goods of any other company. In reply to a question the witness said that in his opinion a fair price for lake tonnage on the average would be 60 cents a ton. The old fashioned, slow going vessels of small capacity, making only about 8 or 10 knots an hour, could not handle ore at 60 cents, but the big, modern, fast ore carriers, capable of hauling from 5000 to 8000 tons, could handle the output at a smaller figure and make money. The American Steel & Wire Company, he said, caused most of their raw material to be delivered at Lake Erie ports, but a large proportion was then shipped by rail to Pittsburgh and other points for manufacture, the rail rate to Pittsburgh being about 70 cents. Cleveland was also an important manufacturing point.

At this point Professor Jenks asked the witness if he or any of the officials of the American Steel & Wire Company were interested in any of the railroads, to which Mr. Gates replied that personally he was the owner of a few shares of B. & O. stock, but that he knew of no other official who had any railroad stocks. So far as the B. & O. were concerned he said that that road had never carried a ton of the output of the American Steel & Wire Company so far as he knew.

Gates on The Iron Age.

"Do you regard *The Iron Age* as being reliable in its publications of current prices?" asked Professor Jenks.

"I think *The Iron Age* is the best trade medium in this country so far as iron and steel are concerned," replied the witness.

"The commission would be safe in accepting the prices quoted therein as current for the period stated?"

"I think you would find them perfectly reliable."

"Could we take these prices of raw and finished products as the basis of an estimate of the profits made by manufacturers?" asked Professor Jenks.

"The prices would be accurate enough, but your deductions would probably be erroneous, because there are certain factors which you would not take into account. For example, the waste in working up billets might be put at 2½ per cent. and that proportion on a \$14 billet would not be so much, but on a \$35 or \$40 billet it would be very important. There are many other fine points which would probably be missed in making up an estimate of profits based simply on current prices, no matter how accurate those prices might be."

The Tariff.

"Do you regard tariff protection as necessary to the output of your company?"

"I think the tariff has been an excellent thing for us and that it should not be removed. In 1880 I appeared before the Senate Finance Committee and asked for 6 10 cent per pound protection on wire rods, and I told the committee that if we were granted this protection in ten years we would make all the rods used in the United States. I think the result has more than supported my assertion, for we now not only make practically the entire consumption of the United States, but we export rods largely. In 1884 the production of wire in the United States was 40,000 tons, while this year it will exceed 1,250,000 tons."

Barbed Wire Prices.

At this point Commissioner Livingstone asked how much the combinations of manufacturers had increased the cost of wire to the consumer, to which the witness replied that the increase in the price of wire and all other iron and steel products recently noted was due to causes entirely foreign to the combination. Professor Jenks then quoted from *The Iron Age* a series of prices tending to show that certain lines of goods, notably barbed wire, had increased more than others, to which the witness replied that the American Steel & Wire Company had a practical monopoly of the manufacture of barbed wire guaranteed to them by a large number of patents which they had purchased at heavy expense and which had cost hundreds of thousands of dollars to defend in the courts against infringements.

"Then you make a good profit on your barbed wire?"

"Yes, sir; we make nothing without a profit, but I think our profit on barbed wire is perhaps a little greater than that on most of our products for the reasons I have stated. We do not have an absolute monopoly on the manufacture of barbed wire, however, for the reason that a limited number of manufacturers are operating under licenses granted under the patents which we own. We pay no attention to their prices or their output, however, and are not influenced by them in any way."

"Do you have agreements with independent producers as to the price of wire nails?"

"None at all. We have no agreements as to the prices of any of our products."

"Do you supply wire rods to independent nail makers?"

"We do to some. We do not limit our operations to any one channel, but take good customers wherever we can find them."

"Do you make woven wire fence?"

"Yes; last year we made 25,000 miles. We have our own patents on both the machinery and the product. Formerly we used the German Malmédie machine, but now fence making machinery is not only made in this country to supply the entire demand but it is exported in large quantities. It is only 15 years since I went to Germany to buy these machines, and it is difficult to realize the strides that have since been made."

"In your opinion would it be possible for the wire nail manufacturers to make a pool and control the price?"

"It would be utterly impossible. Not long ago we had stories current to the effect that such a pool had been formed, but there was no basis for them. The best reason in the world why it would not be possible to make such a combination is the fact that any machine shop in the country is capable of turning out wire nail making machines, and there is no patent either on the machine or the product."

"Do you make the same price on wire nails to all classes of customers?"

"No; we have a jobbers' price, a carload price and a less than carload price, the difference between the lots being 15 cents per keg in each case. On contracts jobbers pay 2½ cents per keg additional."

The Wire Company and Wages.

Replying to a question as to whether the American Steel & Wire Company paid higher wages than were paid by the constituent companies before the combination, Mr. Gates said that the wages now paid were at least 40 per cent. in advance. Three increases had been made within a comparatively short period, two averaging about 15 per cent. each and one 10 per cent. Steel workers received much greater advances than other workmen, because their wages were based on a sliding scale which advanced them, rapidly with the increased cost of billets. For this reason some salaries had been increased 150 per cent. within the past year.

As to whether the American Steel & Wire Company employed union men the witness replied that it made no discrimination, but it did not recognize the unions. The scale of wages was fixed by negotiation with the committee representing the individual laborers. He believed the Amalgamated Association scale prevailed in all the plants, but it was not introduced on the demand of the association. Replying to Commissioner Ratchford the witness said his company employed 36,000 men, and in answer to a question as to how they were enabled to treat with so many individually he said it was simply by "paying the going rates."

"Have you ever signed an Amalgamated scale?"

"Not as an official of the American Steel & Wire Company. We have never been asked to do so. Some of the constituent companies formerly signed such scale."

"Let us get right down to the point," said Commissioner Livingstone. "Would you recognize organized labor if asked to do so?"

"I will answer that question very frankly," replied the witness. "We would not."

"Do you actually need the protection you now enjoy?" asked Mr. Livingstone.

"We must have it if we are to do the same business

If we are to employ the same number of men and furnish the same amount of freight for the railroads of the company we must have the same protection. It should not be forgotten that in this country our railroad hauls on heavy products are long and that we need protection to offset the freights we must pay. Railroad transportation is quite as important a feature for us to consider as the tariff on imports.

"It is a significant fact," continued the witness, "that in spite of difference in wages in Europe and the United States, they being much higher in this country, our average exportations are now running about 700 tons per day."

"Is it not a fact," asked Commissioner Ratchford, "that although wages may be higher in this country living is much cheaper?"

"It is not a fact," replied the witness emphatically. "I have made a careful investigation in all the mill districts of Europe and I have only found a single item in which the European laborer has an advantage—namely, that of rent. Food and clothing are as cheap or cheaper in the United States, and the same shoes that can be bought in this country at a certain price are sent to Germany and there sold to workmen at a higher price."

"How, then," insisted Mr. Ratchford, "can you produce goods at a cost that will enable you to export them in competition with the output of these European plants?"

"The answer to that question is a very simple one and I am very glad you have asked it. The secret lies largely in the difference in cost of material. Coke in Germany costs \$5.50 per ton, while in the United States it costs \$1.50. Coal and iron ore are much cheaper in this country, so that if labor were the same on both sides of the Atlantic we could make in the United States all the iron and steel needed in the world."

Export Prices.

Replying to questions Mr. Gates said that the prices made by the American Steel & Wire Company on goods f.o.b. New York and London were exactly the same, taking the freight into account. Sometimes the export price of an article was lower than the price in the United States, and at present that was true of most lines manufactured by the company, but the reverse might be true at any time, the rates depending upon competition, supply and demand on both sides of the Atlantic, and various other reasons. Without regard to the question of price at which goods were sold in a foreign market, the very fact that there was such a market resulted in a reduction in the price of goods sold in the United States, for it served to increase the tonnage of plants and thereby permitted economies to be effected that tended to cheapen production in all lines. So far as the foreign market was concerned it was sometimes necessary to cut the price in order to compete with foreign producers, especially those of Germany, that Government paying a subsidy of \$7.50 a ton on all exports, besides making special rates on the railroads on all goods designed for shipment out of the country. The German Government did everything in its power to help its manufacturers, while in the United States there seemed to be a strong prejudice in many quarters against concerns attempting to build up a large business.

"In spite of all the difficulties that have been encountered," continued the witness, "we are building up a valuable export trade in the Orient, especially in Japan and China. Railroads have seen the importance of taking care of a through rail and ocean rate, and have made us a rate that has enabled us to ship overland to the Pacific Coast and thence by steamer to the Orient. Right in this connection I would like to say that if this commission will recommend a subsidy to American steamships on the basis of the tonnage of American products they carry it will do the greatest possible amount of good to the American manufacturer and to the country at large."

An International Pool.

Professor Jenks here asked the witness to state whether there was any foundation for the reports circulated recently as to the efforts made by certain American wire manufacturers to induce the principal foreign manufacturers to enter into a combination.

"I am perfectly willing," said the witness, "to tell the commission the entire story about that incident. I went abroad with a view of making a combination with the German manufacturers, who are the only ones whom we regard as important rivals. I met them all and I found them entirely willing to make a deal with us, except that they wanted to provide 75 per cent. of the output while we were to take 25 per cent. Of course I wouldn't touch such a proposition. We offered to divide equally on a 50 per cent. basis, but at first they would not meet my terms. Subsequently, when I think they would have allowed me what I asked, I became doubtful in my mind as to the expediency of the arrangement, and left the country while they were seeking to bring me to another meeting."

German Syndicates.

"Do the German manufacturers have agreements among themselves as to prices?" asked Professor Jenks.

"They do in every line," replied the witness. "These agreements are printed and signed by the managing directors of the various firms, and the Government enforces them. Those agreements are not only made among manufacturers in the same lines, but between allied lines as well, the object being to enable them all to make money."

"Does the German Government supervise the operations of these manufacturers?" asked Professor Jenks.

"There can be no doubt about it," replied the witness. "One prominent manufacturer told me that in the annual report which he has been required to make to the Government for taxation purposes he put in his plant the first year at a valuation of 25,000,000 marks and reduced it each year until he got it down to 1 mark, when the German Emperor sent for him and demanded to know if he thought the Empire could be run on that basis. This would seem to indicate that there is plenty of Government supervision in Germany and that the Emperor himself takes an interest in German manufacturers."

"Would you be willing to submit to Government supervision?" asked Commissioner Clark.

"We would like it above all things," responded the witness, "for we believe it would help us as against all our competitors."

"But," suggested Mr. Clark, "suppose an international trust such as you undertook to organize should be perfected, how could it be controlled?"

"Well, in the first place, you could tax our profits and make us go after the Germans to give us a larger share of the world's output. You may be sure we would go after it all right."

"Could you furnish us with any copies of the agreement between German manufacturers of which you have spoken?" asked Professor Jenks.

"No," replied the witness, "it would be impossible;" adding jocularly, "You see, I stole them, or rather I had them stolen, and I propose to hang on to them," a rejoinder that caused a hearty laugh among the members of the commission.

"Would an international combination force prices up?" asked Mr. Clark.

"It might. When I talked with our friends in Germany I suggested an advance of \$10 per ton, but the Germans thought the public would stand a raise of \$30, so you can see the American manufacturers are not the most grasping men in the world."

Valuation of the Wire Plants.

At the request of the commission the witness then described the organization of the American Steel & Wire Company, stating that he and a Mr. Ellwood had bought up the various companies that were consolidated. The capital was fixed at \$40,000,000 preferred and \$50,000,000 common stock. The plants were put in to represent \$70,000,000, and the balance was working capital. It was probable that the plants could be built to-day for a little less than they were rated on the books, but the old plants would earn a great deal of money before the new ones could be built, for it would require at least 36 months to put them in operation. As to the exact value of the plants, the witness said that 70 per cent. of them were appraised by three of the best engineering experts in the country at \$28,000,000 in December of 1897 and January and February of 1898, a time when they could have been duplicated for 60 or 80 per cent. of what it would cost to put them up to-day. In the witness's opinion \$50,000,000 or \$60,000,000 would be a fair valuation at the present time, not counting the value of patents, trade-marks, good will, &c.

"Do you regard the plant or good will of a manufacturing concern as having the greater value?" asked Commissioner Clark.

"It is hard to fix any rule," replied the witness. "In England they pay a great deal more attention to the good will of a company than we do in this country. They capitalize their concerns on a basis of 7 per cent. profit, and I think that would be a fair basis for operations in this country. You have to consider earnings almost entirely when you are getting at the value of a piece of property. For example, the Pennsylvania Railroad is worth a great deal more money per mile than the Atchison, Topeka & Santa Fé."

A Federal Charter Law.

Replying to a question as to whether he would make any suggestion for legislation, Mr. Gates said that in his opinion a Federal charter law would be an excellent thing. He would provide a tax of about 1 per cent. per annum of the capital stock of each corporation, which would prevent overcapitalization, and there should also be sufficient supervision to keep the corporations in line with the proprieties.

"Is it not a fact," said Commissioner Farquhar, "that

the four leading iron and steel combinations, including the Carnegie, the Federal Steel, the National Steel and the American Steel & Wire Companies, control practically the entire output in their branches?"

"Oh, no," replied the witness. "In the first place we do not control 40 per cent. of the furnaces, and may be not 30 per cent. In Bessemer steel we control perhaps 80 per cent. of the product and in open hearth steel from 50 to 60 per cent. We are the owners of about 500,000,000 tons of ore, but we probably do not mine more than 60 per cent. of the output of the whole country. In all these figures I mean them to represent the total output of the four companies I have referred to."

As to whether the American Steel & Wire Company had any agreements with other companies as to prices, the witness said that they had none, but that he believed all the companies would be glad to have the prices much lower than they were at present. It would be an advantage not to have to charge so much, especially in the foreign market. Under the present high prices of raw material the American Steel & Wire Company had paid more for steel in some cases than they received for their finished product.

Mr. Gates made a very interesting statement concerning the outlook for the maintenance of present prices

The Outlook.

"Not long ago," said he, "I was disposed to believe that in a year we would see a very material reduction in price, but I have recently been talking with the presidents of several leading railroads and I have come to the conclusion that relatively high prices will continue for two or three years. It must be remembered, in the first place, that all the iron and steel manufacturers in this country are from three to nine months behind on orders, while it is much worse among European manufacturers, who are sold up for 18 or 20 months. A thousand tons a day of steel plates are now being used in the construction of railroad cars, while shipbuilding is increasing at a phenomenal rate. The railroads are practically renewing their entire equipment, 20-ton freight cars giving place to those carrying 50 tons, light rails being superseded by heavy rails and wooden bridges coming down to make room for the best modern steel structures. Of course there is a large element of uncertainty in any estimate of this character, and many of the wisest men in the iron and steel trade have been deceived as to the trend of prices, but in view of present conditions I cannot see why we should get on a much lower level within two or three years."

Replying to the suggestion that the plants acquired by the American Steel & Wire Company had been put in for rather more than they were worth for capitalization purposes, the witness said with considerable emphasis that not a plant had been purchased which could not be sold for from 25 to 40 per cent. more than was paid for it.

"Does not the fact that you control from 60 to 80 per cent. of a product enable you to raise the price if you wish?" asked Commissioner Clark.

"It is not our policy to crowd the mourners," replied the witness. "We don't believe in putting up a price simply because we have the power to do so, and we don't believe that it is good business to try to make so much money in six months that we won't make any for the year following. I think the best illustration of our method of doing business is found in the fact that although we now control a practical monopoly in barbed wire, yet in 25 years the price has gone down steadily from 20 cents per pound to 2 cents. There was a time when the head roller in a mill got as much as \$21,000 a year salary, and I remember how astonished were the members of the Senate Finance Committee when I told them so, Senator Harris declaring that it was more than twice the salary of a Justice of the Supreme Court, to which one of the other members of the committee suggested that there might be a great deal more timber available for Supreme Court judges than for good head rollers. The compensation of a head roller to-day would range from \$10,000 to \$15,000, though very few receive the latter figure."

In reply to a question as to whether the companies forming the American Steel & Wire combination had come together to save themselves from financial disaster, the witness replied that he could only speak for himself, and that the consolidated company with whom he was connected paid 27 per cent. per annum for three years before the American Steel & Wire Company were organized, a fact which seemed to demonstrate that they were not driven into the combination. He added that since the organization was effected practically every plant in the United States manufacturing similar lines of goods had been offered to the combination, but all such offers had been rejected.

As to why the American Steel & Wire Company had not paid dividends on their common stock, Mr. Gates said that he thought he was chiefly responsible for that fact. He had been opposed to distributing the earnings of the company to the holders of common stock until certain

property had been acquired and until there was money enough in the treasury to continue to pay dividends on the preferred stock in case earnings should be reduced by the receding of the tidal wave of high prices. This closed Mr. Gates' testimony.

Mr. Pam, general manager for the American Steel & Wire Company, was then examined briefly as to the advantages enjoyed by corporations taking charters under the New Jersey statute. He gave it as his opinion that one of the chief benefits of the New Jersey law was the power it gave to corporations to acquire the stock of other companies. As an illustration he cited the laws of certain States which prohibited foreign corporations from owning in fee more than 100 acres of coal lands. Under the New Jersey law this restriction could be got around through the organization of a company chartered in the State to own any desired amount of lands, while the New Jersey corporation had the power to acquire the capital stock of the land owning company.

The commission will examine several other witnesses before concluding its inquiry into the iron and steel industry.

W. L. C.

The Carnegie Reorganization.

Andrew Carnegie arrived in Pittsburgh on Monday evening and spent all of Tuesday in consultation with leading officials of the Carnegie Steel Company, Limited, and the H. C. Frick Coke Company. There was also present at the conference Henry W. Oliver of the Oliver Iron Mining Company. The consolidation of the Carnegie Steel Company, the H. C. Frick Coke Company and other Carnegie interests, which has been under way for a long time, will not be made, and Andrew Carnegie will continue to hold a controlling interest in this large corporation. The following official statement has been issued:

"At the meeting of the Carnegie Steel Company and Frick Coke Company interests, held to-day, it was resolved that no change be made either in organization, ownership or policy. Mr. Carnegie signified his entire concurrence with this action and expressed himself as delighted to continue as before with his partners. With reference to the recent newspaper reports of war between the Rockefeller and Carnegie interests the company state that these have no foundation in fact. The Rockefeller fleet carries the ore mined by the Carnegie Steel Company from the mines leased from Rockefeller, about 1,500,000 tons per annum, but the Rockefeller boats, being unable to transport more of the Carnegie ore, which was offered to them, the Carnegie Steel Company were compelled to provide their own boats, the company's total shipments being 4,500,000 tons. There is no truth in the report that the Carnegie Steel Company contemplate going into shipbuilding at Conneaut."

Mr. Carnegie spent Wednesday visiting the different works of the Carnegie Steel Company in company with Chas. M. Schwab and other officials.

PERSONALS.

Willard S. Mattox has gone to Boston to take a place in the local office of Rogers, Brown & Co.

W. C. Reilly has been made assistant to District Manager Campbell of the Republic Iron & Steel Company at Youngstown, Ohio.

Captain Yamonochi of the Imperial Japanese Navy, who for several years has been acting as inspecting officer in England for the work undertaken in that country for the Japanese Government, sailed for Japan from Vancouver last week. Captain Yamonochi, while in the United States on his homeward journey, inspected a number of the large mills of the Pittsburgh district, with the view, it is said, of placing there some large Japanese contracts.

Under the will of the late Lucian Sharpe of Brown & Sharpe, Providence, R. I., a sum of \$10,000 is left to Brown University.

Simon Joseph has resigned as superintendent of the Indiana Forge & Rolling Mill plant of the Republic Iron & Steel Company at New Albany, Ind.

Samuel B. Sheldon, for a number of years with the Otis Steel Company, Limited, Cleveland, Ohio, has accepted a position as assistant superintendent of the Joliet plant of the Federal Steel Company.

John Hays Hammond, the well-known American mining engineer, whose name has been prominent of late years from his connection with the mines of the Transvaal and the troubles in that country, sailed for New York from Liverpool on Wednesday on the "Teutonic."

An international congress of methods of testing building materials is to be held at Paris from July 9 to 16, 1900. Details are in the charge of M. Baclé, secretary, of 57 Rue de Chateaudun, Paris.

HARDWARE.

Condition of Trade.

THE Hardware market continues to be characterized by an active demand and a strong tone. The condition of the Iron market is such that the maintenance of existing prices for some time to come is clearly indicated in manufactured products, and similar advances are being made by Hardware manufacturers, as their lines are directly affected by the higher prices ruling for the raw material. There is, however, a good deal of unevenness in the demand for goods, some lines being much more in request than others. In some branches, as, for example, some kinds of Hardware concerned in building, the demand while good is not up to the capacity of the manufacturers. There is also a good deal of inequality in the stocks on hand with the jobbers, in some lines their supplies being pretty well depleted, while in others they have ample, if not heavy, stocks. Manufacturers report a disposition on the part of the jobbers to purchase freely for next year's trade at prices current to-day, but there is a general disposition on the part of the manufacturers to accept future orders only at prices ruling at time of shipment. The question as to the extent to which high prices interfere with consumption is touched upon in letters given in the following pages from representative retail merchants in different parts of the country, and our readers will be able to judge from the general tenor of these communications what the feeling of the trade is on this important question. There continues to be a good deal of inquiry from abroad for Hardware and Iron products, and notwithstanding the high prices there is a good deal doing in export business. In a number of lines, however, as we have already pointed out, the high prices are shutting out foreign orders, and in some cases tending to unsettle the position of American goods where they have been successfully introduced.

Chicago.

(By Telegraph.)

The demand for Shelf Hardware shows no abatement whatever. Retailers are continuing to keep their stocks in good shape, mail orders being a decided feature of present business, as salesmen are not able to get around fast enough to satisfy the trade. A very good demand is reported in Tinware, Enameled Ware and kindred lines. The trade in Aluminum goods has also recently improved considerably, owing to the better purchasing power of the people, and also the higher price of Tinware, which reduces the margin between them. Sheet Aluminum, however, is advancing, 2 cents per pound having been added to the price by manufacturers the past week, who have also changed their terms to 30 days net cash. The Wire Nail, Wire and Sheet manufacturers are endeavoring to induce jobbers to make their terms net cash 30 days on such items. The jobbers handling Shelf Hardware, however, say they will have some trouble to do this, as it would compel them to make double statements, double bills, &c., and add much to their bookkeeping expenses. The attempted reform will take some time for its accomplishment. Jobbers report

a remarkably strong demand for furnace sizes of Coke Tin Plates, and also a good trade in Galvanized Sheets for furnace purposes, as well as furnace fittings. The movement in this line has seldom been as large as at present. The Heavy Hardware trade is still extremely active. Jobbers are struggling with back orders, trying to get customers satisfied who have been waiting for deliveries since July, and even further back. Stocks of Iron and Steel are still badly broken. It is intimated that Wagon Skeins will soon be advanced.

St. Louis

(By Telegraph.)

Price changes are few in number this week. Manufacturers have advanced Screen Doors from \$2.50 to \$3 per dozen. For present shipment \$1.40 is quoted on Wire Cloth. The disposition continues to lay in a supply of Screen goods in ample time for next season's use. A repetition of last season's experience, with present forethought, will hardly occur. The general line of Hardware is in good movement, and at firm prices. Building is comparatively restricted in this vicinity, but the houses now being finished call into use a considerable amount of Builders' Hardware. Spring goods are being sought for and purchases made, as the terms between buyer and seller are straightened out. Many dealers are discontinuing bills for goods of this nature and putting the material into stock at once. Retail stores are being spruced up now in readiness for the holiday displays, and jobbers do not seem to have an opportunity to clean up as usual between seasons. The trade as a whole seems to be filling stocks up judiciously without any element of speculation. The only weakness noted is in Galvanized and Black Sheets, which do not seem to be in heavy demand. Sales of Roofing Plate are large despite higher prices. Barb Wire is in moderate action. For some reason unknown Plain Wire is in better sale than Annealed. Nails, both Wire and Cut, particularly Iron, are being freely purchased. The Heavy Hardware trade report that their sales are holding up beyond the usual slackening time. It is likely that more than one factory will keep at work during the winter months, to be in readiness for the spring trade.

Louisville.

W. B. BELKNAP & Co.—The season is approaching when we naturally look for more or less relaxation from the tension of the early fall months. We presume this year will be no exception. Still, the slow deliveries by mills and other manufactories indicate full order books, and if their figures are to be believed there will be a good business at least the first half of next year; in short, nothing that looks adverse is in sight. Every horse seems to be busy wearing out Horseshoes, every Wagon reducing its tire by ceaseless revolution, every arm that can wield a tool of any kind is active. There are new enterprises afloat, there is opening and boring for Oil and cutting of timber in this State, which promises activity for quite a while to come.

Temporarily we have been distracted by an election which is so close as to be possible of determination only by the most careful official count. We are promised by the respective parties that whichever side wins there will certainly be better men and more reputable citizens established in office. It strikes us that there is some fallacy in this proposition, as the leopard is not given to changing his spots, but we are frank to confess that there is ample room for individual betterment. The closeness of the vote gives us ground to hope that the very best

men will hereafter be put up for candidates by all political parties.

The Hardware meeting next week at Pittsburgh is looked forward to with unusual interest. Many questions have arisen in connection with the new conditions prevailing that need discussion, with a view to solution. The result should be a better understanding on the part of all concerned.

Cleveland.

THE W. BINGHAM COMPANY.—Trade conditions still continue to be very satisfactory. The demand is excellent on all lines, with two or three exceptions. Prices are firm and show no sign of weakness. Orders for spring season's goods are being freely placed and from present appearances the supply of Wire Cloth will fall short of the demand. It must be borne in mind that the supply of Fine Wire that goes into the making of Screen Wire Cloth practically all comes from the American Steel & Wire Company, and whereas they did not make any of this Wire at their Waukegan mill that was recently destroyed by fire, still the tonnage of that mill, for this season at least, will have to be distributed throughout their other mills, which will probably prevent an increase of their Fine Wire production.

The manufacturers of Screen Cloth have practically gotten together and there is already talk of an advance in price at an early date.

Our collections are fair.

Philadelphia.

SUPPLEE HARDWARE COMPANY.—Trade continues very active. Without having the individual opinion of all the jobbers in our city we would state there is greater activity in trade the last two weeks than the preceding two. There is a decided firmness in everything in Hardware and the fact which has become known to the smallest buyer—namely, the scarcity of raw material, coupled with the fact of the large orders which have been placed for Structural Iron, Iron Rails and Steel Cars, which all must tend to reduce the available output for the next year, has evidently had a stimulating effect upon some of the medium and small trade buyers. Some of the retail trade express themselves in a manner which shows they have a very limited knowledge of the possibilities of jobbing houses in selling their goods below manufacturers' present established prices. They say, "Oh, but you had the goods on hand when the advance took place," and as one man expressed it, "I also see from the editorial in *The Iron Age* jobbers had goods on hand." The limited extent in which jobbers had goods on hand when the advance took place need scarcely be taken into consideration for a moment. They may have had a few goods on hand of a particular article advanced, they may have had some few goods on back orders bought at old prices, but in comparison with each man's trade comparatively few. If it were possible for a jobbing house to supply the trade at the old prices for a certain limited time it would necessitate their having purchased prior to the advance at least the amount of goods that they sell during the year. Now, what house selling \$2,000,000 worth of goods a year, as an illustration, could expect to put in \$2,000,000 worth of goods? First of all, where would it be possible for them to obtain the money? The next question might be, where would it be possible for them to get warehouses to store the goods? The next question is, what buyer or buyers are there who could guess at the possible sales for the next six months or year? The same principle would hold good with smaller houses, whether their sales be \$1,000,000, \$500,000 or \$250,000. The same principles are involved—money to pay for their goods, the comparatively limited space which they may have to store them and the same guessing at what the probable sales might be, and the few goods coming in at the old prices would be infinitesimally small as compared with their business.

We do not desire for a moment to intimate that jobbers have starved their stocks. While goods have been going up, if they were not pessimistic in their views they have bought more largely than heretofore, possibly as

much as their good judgment dictated, as they had money at their command. They have pursued, however, as a rule a rather conservative course, the same as they did when goods were declining and there was a shrinkage of everything on their shelves from year to year for from 10 to 15 years. The gradual shrinkage, however, was sufficient each year to practically wipe out a large amount of the jobber's profit. It is safe to say that neither the retail merchant, the jobbing merchant nor the manufacturer will any of them make a fortune out of the goods they had on hand when the advances began and were followed up from month to month as they have been. There is naturally more disposition and incentive for persons to buy freely, whether retail merchants or jobbers, when business is prosperous, as it has been during the last few months and is now, than was the case during the few years when everything was blue, discouraging and uncertain. The visible signs of prosperity are just as contagious as the visible signs of depression and uncertainty.

The meeting of the National Hardware Association, which takes place in Pittsburgh from November 15 to 18, will no doubt bring forth the opinion of the large and representative manufacturers in regard to the future, possibly for the next 12 months, as well as bring forth the opinion of prominent jobbers. These collected opinions doubtless will be published in the columns of *The Iron Age*, and may be of advantage to the trade at large, whether they be retail merchant, jobber or manufacturer. It is but natural to infer this, for perhaps no larger gathering of manufacturers and jobbers have ever been together at any one time than will be found in Pittsburgh at the coming meeting of the National Hardware Association.

Nashville.

THE GRAY & DUDLEY HARDWARE COMPANY.—November, usually a quiet month for the Hardware trade in this section, is proving to be an exception this year.

During the first week of this month we were favored with some cool weather, which gave impetus to the movement of such goods as Heaters, Coal Hods, Fire Shovels, Lap Robes, Leggings, and other seasonable goods. There is a good demand for a general assortment of Hardware, but Tools for use in phosphate mining are strong favorites. The phosphate business has developed so rapidly in this section that the Hardware trade has been taxed to the utmost to supply, as fast as called for, such tools as Shovels, Picks, Stone Forks, Scrapers, Dump Carts, &c. As an instance of the rapid growth of this industry we cite the town of Mt. Pleasant, Tenn., which a few months ago had a population of about 400, and now boasts of over 4000. There is more or less prospecting for phosphate in nearly every county in Middle Tennessee, with varying results; but our information is that where the work has been done systematically and intelligently stone of good quality has been found in paying quantities.

Collections are not complained of, but are hardly in keeping with the sales, which causes us to feel that some customers are buying in a speculative way.

San Francisco.

MILLER, SLOSS & SCOTT.—Considerable rain has fallen the last month, thus assuring the country of good crops and good business for next year. The fall trade has kept up remarkably well, and is a considerable improvement over last year, notwithstanding the prevalent high prices.

The foreign and export demand is larger than usual and continues to increase, while the reports from the Alaska gold bearing fields are good, and preparations are now being made for quite a rush to the new diggings in the spring. Altogether business is very satisfactory on the Pacific Coast.

Portland, Oregon.

CORBETT, FAILING & ROBERTSON.—The rush of orders we experienced in October has materially subsided since we have entered the present month. We are, however, well satisfied with the trade so far, and will go into winter quarters thankful for the good things 1899 brought us.

New lists and discounts are adopted as they come to hand. We certainly think that the present year's prices are retarding consumption, and should be glad to note a reaction in the next three months.

Omaha.

LEE-GLASS-ANDRESEN HARDWARE COMPANY. — The very satisfactory trade conditions existing in this section of the country still remain, and the outlook for the future promises an unusually heavy volume of business covering the winter months.

Prices on everything rule exceedingly firm. A few desultory advances appear occasionally, mostly on lines that have been slow to catch on to the spirit of the times.

Prices on all staple goods have been forced up by the manufacturers to a point, apparently with a view to ascertain just how far they could be pushed without affecting the demand, or perhaps with the idea of securing the largest rake-off possible before a reaction occurred.

Jobbers and large consumers have about ceased to buy in anticipation of their requirements, and the old hand-to-mouth policy will probably prevail from now on. What effect this will have on the market remains to be seen.

We do not look for any important changes in trade conditions in this section until the prospects for next year's crop are fully developed.

Notes on Prices.

Wire Nails.—There is no change in the condition of the Wire Nail market. Demand is moderate and is confined to orders for small lots to meet immediate necessities. Quotations are as follows, f.o.b. Pittsburgh, terms, 30 days net:

To jobbers in carload lots.....	\$2.95
To " in less than carload lots.....	2.97½
To retailers in carload lots.....	3.10
To " in less than carload lots.....	3.20

Jobbers in most cases are still in a position to shade card prices.

New York.—The local market continues in about the same condition as noted last week. Demand keeps up well for the season, with some irregularity in prices. The following quotations fairly represent the market:

To retailers, carloads on dock.....	\$3.25 to \$3.28
To " less than carloads on dock.....	\$3.30 to 3.41
Small lots from store.....	3.35 to 3.45

Chicago, by Telegraph.—Manufacturers are still enjoying a strong demand, and although operating their factories in this vicinity to full capacity are behind on deliveries. They continue to quote single carload orders on the basis of \$3.28, Chicago. Jobbers report a remarkably good demand for the season, and hold small orders from stock at \$3.88.

St. Louis, by Telegraph.—The demand continues to surprise jobbers, as it is much more active than ordinarily felt in this month. Specifications were being bid on here last week for some thousands of kegs needed as a result of extensive freight car orders placed by railroads. No change in prices is noted, continuing at \$3.33, base, St. Louis, for single carloads and \$3.43 for small lots.

Pittsburgh.—There are no new features to report in the Wire Nail market. Demand has fallen off, owing to the lateness of the season, and buyers are placing orders monthly for immediate wants. There is some unevenness in prices of Nails among jobbers who have stocks bought when prices were much lower than they are now. Owing to advance in freight rates on November 1 delivered price of Wire Nails to many points is higher. We quote f.o.b. Pittsburgh, terms, 30 days net:

To jobbers in carload lots.....	\$2.95
To " in less than carload lots.....	2.97½
To retailers in carload lots.....	3.10
To " in less than carload lots.....	3.20

Cut Nails.—No change has taken place in manufacturers' quotations during the past week, and demand continues about the same. Quotations in Eastern territory are as follows, f.o.b. Pittsburgh, freight being added to point of destination:

To jobbers in carload lots.....	\$2.60
To " in less than carload lots.....	2.65
To retailers in carload lots.....	2.70
To " in less than carload lots.....	2.85

Some irregularity exists in prices among jobbers, owing to lower price stocks.

New York.—The local Cut Nail market is firmer in some directions, as indicated by the following quotations: Single carloads on dock, \$2.75 to \$2.78; small lots from store, \$2.80. These prices, however, are not adhered to by all jobbers.

Chicago, by Telegraph.—Trade continues of about the same volume as previously reported. An error was made in transmitting quotations last week, and the price for small lots from stock should have been \$2.80, as at present.

St. Louis, by Telegraph.—Sales are reported as on the increase, and especially for Iron Cut Nails. Some irregularity as to prices exists in this market, the range being from \$2.75 to \$2.90, base

Pittsburgh.—There is only a fair demand, the volume of business having fallen off considerably lately. There is also more pressure on the part of mills to sell, and concessions in prices are being made. The advance in freight rates on November 1 makes the cost of Cut Nails, delivered, slightly higher. We quote Cut Nails at \$2.50 in carload lots, f.o.b. mill, Wheeling. However, this price would be shaded for desirable business.

Barb Wire.—The condition of the Barb Wire market remains unchanged, with a moderate domestic demand. Quotations for domestic trade are as follows, f.o.b. Pittsburgh, net cash, 30 days:

To jobbers in carload lots, Painted.....	\$3.40
" " Galvanized.....	3.55
" in less than carload lots, Painted.....	3.42½
" " Galvanized.....	3.57½
To retailers in carload lots, Painted.....	3.55
" " Galvanized.....	3.70
" in less than carload lots, Painted.....	3.65
" " Galvanized.....	3.80

Chicago, by Telegraph.—Manufacturers are having a large business in Plain Wire, but the demand for Barb Fencing is not so heavy. A great deal of Wire, however, is going into Woven Wire Fencing, which is to a great extent taking the place of the usual fall demand for Barb Wire. A very heavy spring trade, however, is expected. Jobbers also report a good demand for Plain Wire, but only a moderate movement in Barb Fencing. Prices continue as follows: Single carloads, Plain Annealed Wire, \$3.18; Painted Barb Wire, \$3.73; Galvanized Barb Wire, \$3.88, with 10 cents advance by the jobbers for small lots.

St. Louis, by Telegraph.—There is nothing new to say, as the demand shows no change from that of last week, the movement being normal. Prices are \$3.78, St. Louis, for single cars of Painted and \$3.88 for small lots, with 15 cents advance for Galvanized.

Pittsburgh.—The market is extremely dull, and very little Wire is moving. We quote domestic Wire at \$3.40 for Painted in carload lots to jobbers and \$3.65 in less than carloads, with an advance of 15 cents for Galvanized, all f.o.b. Pittsburgh; terms, 30 days, net cash.

Smooth Wire.—The demand for all classes of Smooth Wire continues, with a firm market at former quotations, as follows, f.o.b. Pittsburgh, terms, 30 days, net cash:

To jobbers in carload lots.....	\$2.80
To " in less than carload lots.....	2.82½
To retailers in carload lots.....	2.95
To " in less than carload lots.....	3.05

Pittsburgh.—There is a fair demand, but not nearly so large as some time ago. Prices are strong, and we quote: To jobbers in carload lots, \$2.80; to jobbers in less than carload lots, \$2.82½; to retailers in carload lots, \$2.95; to retailers in less than carload lots, \$3.05, all f.o.b. Pittsburgh; term, net 30 days. The charge for galvanizing is 50 cents on sizes from Nos. 6 to 14 inclusive; on Nos. 15 and 16, 85 cents, and on Nos. 17 and 18, \$1.10.

Scythes.—The associated manufacturers of Scythes, with the strong organization which they have formed, are holding prices steadily, and anticipating little difficulty in controlling the market. Some of the plants will not be operated during the year, the plans contemplating the production of the goods where it can be most advan-

tageously done. Some of the jobbing trade at least are not entirely satisfied with the differences in price between the three classes of buyers, as per the A, B and C lists, maintaining that the difference between the A and C lists especially is not sufficient to give the jobber adequate margin. The jobbers also have been rather indisposed to place orders freely at the prices established by the association, not feeling certain that the market will be sustained, although there is as yet said to be no opposition in sight. It is reported also that the manufacturers are so confident of their position that intimations are given out of an advance of 25 cents a dozen before long.

Cordage.—An advance of $\frac{1}{2}$ cent in the price of Manila Rope was announced by manufacturers November 8, resulting in a base price of $15\frac{1}{2}$ cents per pound for 7 16 inch and larger, for small lots. Sisal Rope remains at $10\frac{1}{2}$ cents on the same basis for similar lots. New business in both lines is moderate. Quotations for Rope in carload lots are as follows, with an advance of $\frac{1}{4}$ cent in less quantity, f.o.b. New York, Boston or Philadelphia:

	Per pound.
	Cents.
Manila, 7-16 inch and larger.....	15 $\frac{1}{2}$
" " 3 $\frac{1}{2}$ inch.....	15 $\frac{1}{2}$
" " 1 $\frac{1}{2}$ and 5-16 inch.....	16 $\frac{1}{2}$
Sisal, 7-16 inch and larger.....	10 $\frac{1}{2}$
" " 3 $\frac{1}{2}$ inch.....	10 $\frac{1}{2}$
" " 1 $\frac{1}{2}$ and 5-16 inch.....	11 $\frac{1}{4}$
" Lath Yarn, Medium and Coarse.....	10

Manila Tarred Rope, 15 thread, is quoted at 14 cents, as is also Manila Hay Rope, Medium. The price of Jute Rope is $6\frac{1}{4}$ cents.

Steel Goods.—The market for Steel Goods is very firm and manufacturers report an exceptionally early and heavy demand, a good part of their production for the coming season being already disposed of. In view of the scarcity the past season jobbers are careful to cover their requirements for next year, the business of which it is hoped will be heavy. The advance of about 5 per cent. on heavy Steel Goods, Coke Forks, Coal Forks, Stone Forks, &c., has gone into effect. The manufacturers of Steel Goods have been conservative in the matter of advances and could probably have secured higher prices for next season's goods had they deemed it good policy. They still experience a good deal of difficulty in getting Steel, the mills being very busy and cautious about contracting.

Paints and Colors.—*Leads.*—There is a fair distribution of White Lead in Oil, largely on contract orders, while new business is meager. The market is firm at former quotations, as follows: In lots of less than 500 pounds, $6\frac{1}{2}$ cents; in lots of 500 pounds and over, 6 cents.

Oils.—*Linseed Oil.*—The policy to be pursued by the trade until after the beginning of the new year is likely to be one of hand to mouth buying. Crushers are busy filling contract orders, but present values are not conducive to new business beyond immediate requirements. Seed, however, is relatively higher in price than Linseed Oil. The general price of City Raw is from 44 to 45 cents, according to quality, though one brand is still held 2 cents higher. State and Western Oil is quoted at 44 to 45 cents per gallon.

Spirits Turpentine.—The local market has been strengthened during the past week, owing to increased export buying at Savannah. Prices have been advanced to 52 cents for Southern and $52\frac{1}{2}$ cents for machine made barrels, with some dealers asking $\frac{1}{2}$ cent advance on these prices. Buying has been checked by higher prices, resulting in but a moderate business being transacted.

National Hardware Association.

THE fifth annual convention of the National Hardware Association opened this morning at Pittsburgh with an unusually large attendance of both manufacturers and members. About 200 delegates were present, and nearly as many manufacturers exclusive of those located in Pittsburgh.

The opening session was devoted to organization, Pres-

ident Bishop's address, Secretary-Treasurer Fernley's annual report, and address of welcome by H. B. Lupton, chairman of the Pittsburgh manufacturers' Reception Committee. A number of other addresses were made on the important subject of the permanency of present business conditions. The session was one of the most interesting in the history of the association.

New England Hardware Dealers' Association.

THE November business meeting and dinner of the New England Hardware Dealers' Association was held in the United States Hotel, Boston, November 8, with an attendance of about 50.

An amendment to the by-laws proposed at the last meeting providing for the admission to membership of delegates from other New England associations was adopted, and the application of H. E. Russell as a delegate from the Hardware Social Club of Springfield, Mass., and vicinity, was favorably acted upon. The amendment above referred to was printed in full in *The Iron Age* of October 19.

The after dinner programme included interesting addresses by Edward H. Rice of the Walworth Mfg. Company, Boston, and others. Mr. Rice's subject was "Forty-five Years' Experience with the Walworth Mfg. Company," in which he referred to two notable instances where inventors had reaped handsome profits from their ingenuity, speaking particularly of the well-known Stillson Wrench and the Stanwood Cutter Wheel, both of which are handled by the Walworth Company.

W. E. Blake of the Thayer Heater Company, Boston, talked on the subject of "Fourteen Years in Hot Water Heating Practice," and L. R. Putney, also of Boston, on "Introducing American Ideas in London," giving interesting details of the introduction of the American parcel delivery system in connection with large department stores in the British metropolis.

The music of the evening was furnished, as usual, by Robert L. Van Buskirk and Leslie F. Mansfield.

The Chain Consolidation Completed.

ON Tuesday evening, November 14, 13 different Chain plants throughout the country closed down for purpose of making inventory preparatory to being taken over by the Standard Chain Company. It will be recalled that the consolidation of the different Chain interests throughout the country has been under way for a long time, and after considerable difficulty the merging of the Chain interests into the Standard Chain Company has been completed. All the prominent Chain plants in the country are included, with the exception of two or three, among these being Jones & Laughlins, Limited, of Pittsburgh. Articles of incorporation will be taken out under the laws of New Jersey, and a charter will be applied for in a few days. Concerns to be taken over by the Standard Chain Company are as follows:

P. Hayden Saddlery Hardware Company, Columbus, Ohio.

Baker Chain & Wagon Iron Mfg. Company, Allegheny, Pa.

Garland Chain Company, Rankin, Pa.

James McKay & Co., Pittsburgh, Pa.

John C. Schmidt & Co., York, Pa.

Nes Chain Mfg. Company, York, Pa.

South Harrisburg Chain Works, Harrisburg, Pa.

Bower & Mallory, Carlisle, Pa.

Woodhouse Chain Works, Trenton, N. J.

Franz-Krein Chain Company, St. Mary's, Ohio.

Franz-Krein Mfg. Company, Marlon, Ind.

Nixdorff-Krein Mfg. Company, St. Louis, Mo.

Falls City Chain Works, Jeffersonville, Ind.

The Effect of High Prices on the Demand for Goods.

The following letters from representative retail Hardware merchants are of interest at this time as reflecting the views of the trade on the question as to the extent to which the high prices prevailing interfere with the sale of goods. They are of special value as indicating without bias the opinions and experience of many merchants who are in direct contact with the consumers. In this connection many other subjects of interest to the trade are touched upon by our correspondents:

MICHIGAN.

There is considerable complaint in regard to the high prices on Hardware, and we think if prices advance more it will interfere to an important extent in the sales.

MINNESOTA.

High prices certainly curtail the sales at least 30 per cent.

IOWA.

We think the high price of goods is a decided objection on the part of consumers, and we think prices on some goods have been unreasonably advanced.

MAINE.

We find that while we are selling many more goods than a year ago the high prices interfere to quite an appreciable extent with sales. This is more noticeable with the people of limited means and farmers than with the mechanics.

Quite a number of our customers have deferred repairs and improvements, and the farmers complain of prices of Shovels, Nails and Fencing.

Our sales of Barb Wire this fall are less than half our usual sales.

MISSOURI.

While high prices seemingly have had no effect on sales so far, I have no doubt but that they will keep people from purchasing as much as if prices remained lower.

My trade is almost exclusively with farmers, and they do object to high prices for the reason that wheat, corn and oats (which is about all our farmers have to sell) have not been benefited by what is called general prosperity.

If these products do not advance in the near future I am unable to see how farmers in this section can buy high priced goods, as the majority of them cannot pay what they owe now, unless they sell out or die. Prices on Iron, Steel, &c., are unreasonable, and in my opinion socialism will be the only remedy, and it is bound to come.

CONNECTICUT.

Concerning objections on the part of buyers, there is about as much as there would be if a highwayman forced them to deliver their money. My customers appear to buy (of the goods that are advanced) only such as they are obliged to. I think that a few years of good, steady business has been prevented by the speculative advances.

KENTUCKY.

The high prices of the staple goods in our line, such as Nails, Barbed and Smooth Wire, have had the effect of cutting down consumption to a large extent. The farmers are absolutely refusing to buy Wire. We are doing nothing in that line. The advance on Shelf Goods has not been large enough to affect the sales to a large extent.

DISTRICT OF COLUMBIA.

We have found very much less objection on the part of trade here to pay advance prices than we expected when the boom began.

It is probably due to the fact that our newspapers generally gave so much space in explaining new condi-

tions of trade, which saves us the trouble of educating prospective buyers. We know of two or three cases where prospective building operations have been "held up" on account of the advance in prices, but all told the national capital has never had a more prosperous season.

MAINE.

The advanced prices on goods do not seem to cause as much objection on the part of buyers as would be expected, nor have they so far interfered seriously with the sale of goods; on the contrary, business in this line is so much better than formerly that our sales for the past few months have been very much in excess of those of the previous year.

ILLINOIS.

I think the high prices have interfered with the sale of goods to some extent; I do not think there were as many Wire fences built this fall as there would have been if the price of Wire had been less. Nor do I think there was as much Iron used for roofing as there would have been otherwise. In the case of Shelf Hardware the result was not so noticeable, for there is not enough of it consumed by any one person, as a general rule, to make any great difference.

NEW HAMPSHIRE.

We think in many lines the high prices have to an extent checked sales when the demand was not absolute. Perhaps the most noted is Barbed Wire. In Nails which have so much advanced we do not note much difference, as the work was commenced and therefore has to be completed. Whether it will make any difference in the future remains to be seen. There is a better feeling, and we hope for a good business next season.

ILLINOIS.

The present high prices have made a great deal of difference with me, especially in Nails, Barb Wire, Wire Fencing and Stoves, more than anything else. Customers say "my old Stove will have to do another year."

I have sold less Building Material and Hardware since July 1 than during the same period the past four years.

MINNESOTA.

This season we have not felt the full effect of advances to the consumer, as is usual. Unfortunately there are always retailers that think it good policy to sell against the markets. Think, however, that this point is passed, and we will soon learn more of the effect of high prices with its effect on Hardware. Farm Implements have sold as low as the year before, and therefore there has been a good record made in that line. I am of the opinion that we have seen high water mark on sales for a year or so on Implements. Farmers will repair old machines and get along before they will pay advances. This idea is already being talked and agitated. As regards the Heating and Cook Stove trade, it is not what it ought to be. I think that this line will show some of the results of high prices. We must, however, figure on that element of the trade that placed early orders and have stock to sell for less than the present wholesale prices. Prices on coal here have the effect of people buying cheap Wood Heaters instead of good Coal Stoves. This will hold good in every section where there is wood to be had. If the present prices last I think that there will be a putting off in building the coming season, and the trade in this line will be confined to actual necessary repairing.

NEW HAMPSHIRE.

The advance in prices seems to have a stimulating effect on the sale of goods.

The retired wealthy class with fixed incomes are not building to any extent, as they claim that in a short time they will be able to build at lower prices, but the middle classes are building houses to occupy. The active business class are building for investment and improving their property, as they seem to think the higher prices have come to stay, and the era of extremely low prices has passed into ancient history.

On the whole business is good, and there is a good feeling on the part of all our people.

GEORGIA.

Our business for the last six months has been fully 50 per cent. more than for the same six months of 1898. Probably about half of this is due to increase in price we are obtaining for material, and the other half due to increase in quantity sold. On some lines of goods the advance in price has not affected the demand to any great extent, especially goods that people are obliged to have. We find that the high prices on some goods have stopped the sales entirely; for instance, Barbed Wire is not being sold in this section at all, as the wood fence can be built cheaper than the Wire fence.

MAINE.

There is much objection to the high prices in the Hardware line concerning goods that have been heavily advanced. It is almost impossible to sell a L H square point Steel Shovel. The farmers will not pay the advance on Shovels and other goods. The trusts may put the prices up to suit themselves, but you cannot compel a customer to pay the advanced prices.

OHIO.

We have not much complaint in regard to the advanced prices. In some lines it stimulates trade. In other goods there is complaint. The following articles I find the most objectionable; they are so heavily advanced that they tend to and do lessen the demand for these goods. I refer to Fence Wire, Iron Pipe and Shovels.

PENNSYLVANIA.

I cannot say that high prices have stopped consumption. I hardly think that my experience is an average one, as the larger part of my business is selling supplies for oil wells. As oil is bringing a good price it stimulates drilling and consequently causes a demand for oil well supplies. I suppose, however, that quite a number are deterred from buying on account of the present high prices, but at present their hesitancy is not felt, and I find business better than last year. I am very hopeful of the future, as I think many people who have been deterred from building this year on account of the high prices will carry out their plans next year when they find there has been no decline. This will create a large demand for goods which does not exist to-day.

IOWA.

We find little or no trouble in selling the average line of Hardware at the advanced prices. Such items as Barbed Wire and a few other staples that have materially advanced are the only things that are really affected, and on which the sales are retarded. The sale on Barbed Wire, as an example, is practically nothing.

We have followed the market closely since the beginning of the advances in prices, and have marked up some lines of goods three and four times, and experience no trouble whatever in getting the advances. We think one trouble with some of the retailers has been that they would sell out their old stocks at the low prices at which they bought them, permitting advances to take place and not taking advantage of them; then when their old stock finally became exhausted, and they have to sell at the new prices, they find it harder to get the advance than if they had gradually marked up their goods as the market advanced.

CONNECTICUT.

I have been surprised to see how little the increase in price of goods has affected the demand. People rea-

son that if they pay more it is because of better times, and consequently their own labor and goods will bring more. I cannot see that it has checked sales at all.

NEW YORK.

We are decidedly of the opinion that the abnormal high prices on building material, and especially on plumbing, will retard the building of houses next spring. A small house costing \$1000 was plumbed for \$100 and now it will cost \$200. It is absurd that 1 foot of $\frac{3}{4}$ -inch Galvanized Wrought Pipe should cost 8 cents.

Generally speaking a building will cost 20 to 30 per cent. more than a year ago, and that fact will retard building. We expect much less building in our city next year and will buy accordingly.

NEW YORK.

We do not notice much falling off in sales or complaint in the general run of Shelf Hardware, but on such goods as Nails, Barb Wire, Shovels and Bolts much fault is found and considerable diminution of sales. We notice the falling off more, perhaps, in Barb Wire than any other one item.

MASSACHUSETTS.

This is a hard question to decide. Our sales have been more in amount, of course, as goods are higher. On many shelf goods at retail the advance makes but little difference in Builders' Hardware. Most of the contracts for houses were made before or during the first advances, so it would not affect the consumer much. How it will affect new contracts for the next season is what is troubling us. Contractors figure that a house will cost them 40 per cent. more to build. Now wages and salaries have not advanced. Steady work instead of intermittent will in a measure offset this, but the uncertainty of a fall in prices has to be reckoned with, as many will hesitate to pay \$2800 for a house, which in case of a fall in values might be built for \$2000 within a year.

KANSAS.

I think the first advances up to about 25 per cent. stimulated trade, but the present prices of many staple goods are checking sales and working an injury to the retailer. The loss comes from two classes of customers. The one whose means do not permit him to buy as freely as he wishes (can't buy), and the other who has the money but thinks present prices are exorbitant (won't buy) and prefers to wait.

The great middle class is the most important to the retailer, but he needs the support of all three classes to make his business a success.

Customers are buying mostly for immediate use, and only in small quantities. I believe this is true as to many retailers. If you will bear with me I wish to say a word on an outside matter, yet it relates to the same subject.

Following Patrick Henry's line of reasoning—judging the future by the past—I believe this country will witness within the next few years a panic much worse than in 1873 or 1893.

This panic will fall heaviest on the jobber, retailer and laborer, as the manufacturers will have made enough money by that time to lay idle a few years.

With a Presidential election in 1900 and the unprecedented advance in prices during the last eight months, it should be the policy of every retailer to keep his collections well in hand and not incur any great indebtedness, either in his business or outside of it.

CONNECTICUT.

In the building trade in this vicinity high prices have put a stop to most of the speculative building, but there are many private residences being started.

Manufacturers buy freely at advanced prices without much complaint, and probably advance their prices to cover increased cost.

The farmers have hardly felt the advance yet, as most of their tools were bought at old prices. Next year,

when they have to buy Scythes based on a cost of \$8.25 per dozen, Hoes on a basis of \$3.50, Barb Wire on a basis of 4 cents or more, and other goods in proportion, there will be a good deal of complaint.

MAINE.

We do not think that prices have interfered with the business as yet. All we can judge by, of course, is our own business, which has been 25 per cent. more than last year (certainly from January 1), averaging 25 per cent. or more gain every month.

NORTH CAROLINA.

We will say that the high prices hurt trade badly in some lines. This is true of Barbed Wire, Metal Fencing, Poultry Netting and Wire Nails. The trade has virtually stopped buying these. We like stiff prices, but some lines are getting out of reason, we think.

MICHIGAN.

With the exception of Fence Wire we do not think the advance in price has interfered to any great extent with our sales. There is very little Fence Wire sold at present prices. However, if prices continue to advance we think it will certainly interfere in amount of goods sold.

MASSACHUSETTS.

We do not find that the present high prices of many of the goods that we handle have caused much objection on the part of buyers, or have interfered with sales to any great extent.

MAINE.

We do not feel that as yet advances in goods have caused any cessation in building, &c., in this locality to any great extent.

Of course on many goods the extreme advance is not fully felt, as competition among dealers who have held fair stocks at low prices has served to benefit the buyers.

NORTH CAROLINA.

We are getting a great many complaints on prices of staple goods and the people are buying just as little as possible. They cannot see and understand the advanced prices, particularly the farmer, whose crops have not advanced. We think the manufacturers would better hold prices where they are and give us time to educate the people up to the advance. It is impossible to get the advance from the consumer. If they do not do something of this kind it will be like the man who killed the goose for the golden egg. There has been a big effort to boom prices, but the consumer has to have double as much money to buy staple goods at present prices, and his crops or wages do not bring it, therefore he does not buy. We mean the fellow who wants and expects to pay,

GEORGIA.

Up to the present time we have not had any great objections on the part of the buyer, on account of our chief product, cotton, having advanced also.

KANSAS.

From a Traveling Salesman.—When I received prices for Scythes I wrote the manufacturers that it would be useless for me to attempt to sell their line this year. At present prices the trade would not buy a Scythe till they had sold almost every one they had carried over, and when their stock was entirely exhausted they would buy of jobbers in the smallest possible quantities, so as to be sure not to carry over any to another season. So far as my observation goes, goods that have advanced 25 per cent. the trade are willing to buy about two-thirds as much as usual for spring delivery. Goods that have advanced much more than that they will place no orders for whatever till they absolutely need the goods, and then will buy in the smallest quantities. A short time ago I was in a town where there are few Hardwaremen who usually buy Wire in car lots, and was told that there was not a spool of Wire in the town, the dealers

simply taking orders for what little was called for. The trade in Barbed Wire has been wiped out almost entirely. In some places building seems to go on as before the advances. In others, building has almost entirely stopped. In this town there has been good building the last two years. There was much figuring on new buildings this fall as usual, but so far as I know when the figures were received every one indefinitely postponed construction.

MAINE.

On the whole, we find that the advance in prices has helped our trade, but we think the limit is reached and that further advances will be injudicious.

ILLINOIS.

We are having a good deal of complaint from our customers on prices of the goods in our line that have advanced most. And in many instances our customers are doing without the goods rather than buy at high prices. Building is checked on account of price of lumber and Hardware.

INDIANA.

The advances of prices have had quite an effect on the amount of goods sold; for instance, on Wire and Pipe. We have one customer who now needs about 1000 feet of Pipe, and who buys every year about 3 tons of Barbed Wire. He is getting along without the Pipe, and instead of buying new Wire is removing some of his old fences and rebuilding. Our Pipe and Pump trade is quite good; some years very heavy, when it is at a moderate price. Now 200 feet 1¼-Pipe has lasted us all summer. There is absolutely no trade in these lines except where parties are compelled to have the articles.

Nails are moving all right, these seeming to be unaffected by the rise. We have noticed a falling off of the Rope trade.

Wellmen, and strange to say we have some here who are gilt edged, are doing nothing in their line.

Stoves are seriously affected, and we think from what we hear the dealers say there is going to be a continued shyness on the part of the dealers if the manufacturers make the datings 60 days.

New corn is 25 cents per bushel, oats 22 cents and wheat 66 cents. The farmers complain that the difference in the advance of the two lines of products is too wide.

We think the falling off of the profits in our trade has been 20 per cent. from what it was in the good years previous.

MISSISSIPPI.

The rapid and extreme advance on goods is considered almost unnatural and it lessens the sale of goods. For instance, a farmer wants to build a fence and inquires the price of Wire. The price is high, and he concludes to wait until the price is lower again, as nobody believes these high prices can be kept up.

FLORIDA.

I have found that high prices have certainly curtailed sales to a great extent.

Farmers will not buy any new Implements, are repairing old ones, putting up wood fences instead of using Barbed Wire. The exaggerated prices of Plow and Plow Shapes cut that branch also.

Farmers expect low prices and any explanation given them has no effect.

IOWA.

The high prices have practically stopped the sale of Smooth Wire for manufacture of Woven fence and have greatly reduced the sale of Barbed Wire. There is considerable objection to the advances. It has affected to a considerable extent our sale of Scoops, Shovels and Spades. In the little, small priced items parties have generally purchased without much reference to the advance.

Sage & Grace have succeeded C. M. Sage in the wholesale and retail Hardware and Stove business at Baker City, Ore.

British Letter.

FROM OUR SPECIAL CORRESPONDENT.

Representative London Houses.

IN a former letter I instanced various American products for which there is a real demand in this country. It will take a long time to catalogue all the different lines of goods and how they can be most effectively placed on this market. Although perhaps the lines of demarcation are not quite obvious, yet it is true of the factor as of the manufacturer that he tends to specialize. Thus that sturdy pioneer of American trade in England, Charles Churchill of Charles Churchill & Co., Limited, 9-15 Leonard street, Finsbury, London, E. C., has made a specialty of Machine Tools and his fine warehouse is choke full of American light Machinery. Mr. Churchill's story has already been told in the columns of *The Iron Age*, so I need not recapitulate it. Another special house is that of W. B. Fordham & Sons, Limited, 36-40 York road, King's Cross, London, N. Throughout the British Hardware trade "Fordham's" is a household word. They occupy immense premises at the above address, acres upon acres of floor space, and accordingly are able to stock very heavily. Their specialty is light Domestic Ware. No firm in London are so keen upon a household novelty, nor have any firm such a splendid organization for distributing this particular line of goods. I thought it would be a good plan to interview W. B. Fordham and obtain his ideas upon the prospects of American domestic novelties. So thought, so done. Mr. Fordham knows *The Iron Age* and "after compliments" (as diplomatists always say, when reporting interviews with Chinese Mandarins or the Tsung-li-Yamen) he kindly consented to give me his impressions.

A London Importer's Impressions of American Manufactures.

"Yes, I like to deal with Americans. I find them remarkably businesslike. They grasp the situation with sure intuition."

"Do you like to handle their goods?"

AMERICAN NOVELTIES.—"We are always glad to give every American novelty a fair chance. It is astonishing how fertile in the invention of domestic novelties they are. We have sold enormous quantities of American goods. For example, look at the Dover Egg Beater. We were the first to take it up. In the early days it sold at 3 shillings 6 pence (84 cents); we now sell it at 8 cents and it is going strong as ever. There are scores of American novelties we have marketed in this country. They are all noticeable for their neatness and ingenuity."

"So you are always glad to hear of any American novelties?"

"Yes, of course. I can definitely promise that every novelty sent to us shall be most carefully considered. We don't in the least mind where they come from; anything practicable and cheap is marketable, so far as we can make it so. But make this quite clear to your American friends: They can do better than through us in specifically Hardware goods, such as Tools; we want goods that a woman will use in a house, say in her kitchen."

"Do you find that Americans excel in Kitchen Utensils?"

"That I can't express an opinion upon; their prices are prohibitive as a general rule. They come in strong, however, with ingenious inventions."

AMERICAN CAPACITY.—"Why do you like doing business with American houses?"

"Because when I order goods from America I know I won't be played with. As you know we buy in very large quantities and I find our American friends come well up to the mark in the matter of supply. They take these light goods seriously and make enough of them."

ADEQUATE SUPPLY.—"Any complaints to make about promptitude of supply?"

"*Tout au contraire!* I am often surprised how quickly the goods get across the Atlantic. No, I have only admiration for the businesslike way in which we are

treated by American manufacturers. Look here! That is a Butter Knife—a clever little thing, isn't it? We can sell it, but we can't be supplied. It is made in Sheffield; the manufacturer regards it as a kind of by-product; (mind, I'm not blaming him) he prefers to do the heavy trade. He is busy just now and we must therefore wait patiently for supplies. Now, if this were an American patent I might order 1000 gross and be certain that my order would be filled with reasonable speed. In point of fact, if any of your American friends have anything like it let them communicate with me and they will find me a buyer in all probability."

TERMS—"How about terms?"

"Everything of course depends upon the nature of the article. Naturally if we see a good thing we prefer to secure it as a monopoly, but we always seek to be reasonable."

"Suppose an American brings to your notice a really good thing?"

"We would probably offer him terms for controlling that article during the life of the patent. If, however, it could be made a great deal cheaper in England we might perhaps offer to buy up the British rights. In short, we are here to do that class of business. Your friends have only to communicate with us."

AMERICAN SALESMEN.—"I suppose you are always glad to see American travelers?"

"They call them 'drummers' over there, don't they? Yes, American travelers should never visit London without calling upon us. We are always glad to see them and to help them."

Such, in brief, was my conversation with Mr. Fordham. British to the backbone, he is especially British in that he has no trade prejudices. He will examine everything on its merits. Those who are fortunate enough to "get in with Fordham's" need not unduly worry about their British trade.

A Patent Novelty Incident.

Mention of patent novelties suitable for the Hardware trade reminds me of an amusing incident, not without its significance, which happened to me a few weeks ago.

A Philadelphia man came buoyantly into my office carrying under his arm a distinctly valuable invention, particularly designed for use in hotels and large houses. A company are already working it in America and paying good dividends. My friend is the inventor and had expressly reserved his British and European rights. He asked my opinion upon its merits. I unreservedly praised it.

"What are you going to do with it?" I asked.

"Sell the patent rights stock, lock and barrel. I want to get back. This old country makes me tired."

"Your price?"

"Twenty-five thousand pounds."

"Any offers?"

"Yes, sir; a dunderhead offered me £1500. And in America we are paying 35 per cent. There's no push among Britishers; they're blind as bats to a good thing."

"Well, can I help you?"

"I want you to put me right on to a real spry business man. When I meet him we'll fix things up in ten minutes."

"You will have to show that there is a demand for this."

"That's so. I have been around to 20 or 25 hotels, have seen the managers and there you are."

He produced a sheaf of orders, every one genuine. I took him round to see some likely buyers and they unanimously praised it and offered to market it. But the moment that fatal £25,000 (\$125,000, no less) was breathed the silence was so thick one could cut it with a knife!

As I walked back to his hotel with him he groaned aloud, "And they say money over here is cheap!"

To cut a long story short, he finally departed, leaving to my care the model, which has captivated a good many business men and hotel managers. It lies on my mantel shelf, an example and a warning.

Advice About Patents.

Its European patent rights are honestly worth £10,000. I mention this not because it is typical, but because it indicates a frame of mind among many optimistic Americans. They are thoroughly imbued with the idea that because the market value of money over here is so cheap Englishmen must be pining for speculative investments. The truth is, there is nobody so difficult to move as English financiers especially in the purchase of patents. British patent law is seriously behind American, and accordingly an unworked patent is suspiciously regarded as a risky speculation. If any enterprising American wants to sell his patent rights he must not only be reasonable but he should also put himself in the hands of an experienced and reputable patent agent, who would probably negotiate a patent more successfully than the patentee himself.

About Wooden Ware and Fiber Ware.

A month ago I pointed out that there was a demand in this country for Wooden Ware and Pulp Ware. I am reminded of this by the notice which has been issued from the office of the Lord High Commissioner of Canada to the effect that a large firm of general importers and buying agents are open to take charge of consignments of Wood Pulp and are desirous of corresponding with Canadian producers. In conversation the other day with a man who knows the trade I asked him what the difficulty was with the American goods. He said that the American article was too good, or at least the price was too high. An extensive range of Indurated Fiber Goods was some time ago placed before Whiteley's of London. The goods were greatly appreciated, but only a small number were selected, the prices being prohibitive in almost every case. The Thetford Pulp Works produce an exceedingly cheap article and have got the trade. It is altogether a problem which American manufacturers must solve for themselves whether they can come down to British prices. If they can do so or even approximate to it there can be no doubt that they will successfully obtain a large trade.

American Headquarters, Paris Exposition.

A friend of mine has just come back from Paris, where he has been examining the various sites to be occupied by the various countries on the exhibition grounds. Although America was almost the last to take space subsequent arrangements enabled her to double her area, with the result that the American section is going to be one of the handsomest and most conspicuous on the Quai d'Orsay. The most striking feature is the pavilion which has been erected a few yards from the Invalides Bridge. The skeleton stage has been passed and already with a little help from the eye of imagination one can see the great dome to be surmounted by the national emblem, towering 200 feet above the level of the Seine. At the present moment, of course, this dome is only in frame work, but in a few weeks it will be a harmonious capping of the whole scheme. Over 5000 exhibitors, from every State between the Atlantic and the Pacific, are to be accommodated. The metal trades are prominently represented. Locomotives, Machinery, Mining Implements, Agricultural Implements and Hardware goods will all be on show. Everything that can be thought of has been done to make the purely commercial side of the American section a great success. But of that anon.

AMERICAN TERRITORY ON FRENCH SOIL.—Meantime readers of *The Iron Age* will be pleased to hear that during the exhibition months the American grounds will be legally American territory, the French Government as an act of courtesy and good friendship having made over to the American Government as a temporary cession the plot of ground upon which the pavilion stands. Here there will be all the American accessories of commercial life, typewriters and shorthand clerks, guides and newspapers, an information bureau and the latest quotations from the stock markets of New York and Chicago.

The Salt Lake Hardware Company, Salt Lake City, Utah, have decided to build a large warehouse on account of their increasing business.

Trade with Poland.

AS reflecting present conditions as related to trade with Poland we make the following extracts from the letter of a correspondent:

There is at present very little progress in the introduction of American Hardware. The principal reason for this is that American manufacturers are very insistent in having their goods paid for in cash, whereas German and English manufacturers give a credit of from four to six months, securing in this way a profitable business. As long as the Americans will not take the same steps as their competitors do, and send travelers to this country and have special agencies in the principal cities of the empire, the sale of American Hardware and Machinery will have a very small chance of growing, as American products are only bought when they cannot be replaced by others.

The American manufacturer who solicits the local dealer direct will get the trade, as the system of buying through commission houses is not very much appreciated, as the dealer is not willing to pay with his invoice the middleman's commission.

A Revival in Roller Skating.

THAT roller skating is coming into favor again is evident from the number of rinks that are being opened in different parts of the country and the increasing volume of business reported by the manufacturers of these goods. The revival is probably more marked in the West and Northwest, but the demand for Skates is not by any means confined to these sections. A number of improvements have been introduced in this line of goods, so that the Skates now offered are much easier running than those formerly offered, friction having been reduced to such an extent, it is stated, that but little exertion is required to execute difficult movements. The announcements of the leading manufacturers in this line, such as Samuel Winslow Skate Mfg. Company, Worcester, Mass.; Henley Bicycle & Roller Skate Works, Richmond, Ind.; Union Hardware Company, 95 Chambers street, New York, and Richardson Ball Bearing Skate Company, 152-156 Lake street, Chicago, will be observed in our advertising columns.

Hardware Club.

AT a meeting of the governors of the Hardware Club, November 10, the following new members were added to the roll:

W. BARTON BALDWIN,
60 Murray St., New York.
THEODORE F. MARSELES,
36 Warren St., New York.
FRANK D. TURNER,
256 Broadway, New York.

Robert Ganz, Hamburg, Germany, of the European Bureau of American Manufacturers, announces that he is preparing a new and extensive catalogue of American Tools, Hardware and Hardware Specialties, and requests copies of catalogues and latest prices for export. Those whose goods are to be represented in it are requested to send electrotypes, which may be mailed as "samples of no value," postage 4 cents for each 2 ounces, and when in excess of 4 ounces 1 cent per ounce or fraction thereof.

Capt. A. C. Grove of Grove & Co., Hardware merchants Ellwood City, Pa., has purchased a half interest in the Ellwood City *Motor and Eagle*, a wide awake and influential newspaper of that section. This new line taken up by Captain Grove will not result in his quitting the Hardware business.

John Madison has removed from West Saticoy to Saticoy, Cal. In the latter place Mr. Madison has a larger store and will carry a materially increased stock.

About \$100 worth of goods were stolen from the store of Smith & Tomlinson Company, Hillsboro, Texas, on the 5th ult. On the 30th the burglar was sentenced to four years' imprisonment in the State penitentiary.

Trade Winning Methods.

This department will contain a description of approved methods of bringing customers to the store by means of newspaper advertising, circulars and such special expedients and methods as are found useful by enterprising and progressive Hardwaremen.

A cordial invitation is extended to merchants to co-operate in the effort to make it suggestive and of practical use to the trade.

ADVERTISING FOR PROFIT.—No. 9.

BY H. C. W.

AS AN ESSENTIAL PART OF ANY BUSINESS, advertising must be recognized. The man who ignores it may be all right for a time, but there will eventually be a place in his career when something will stop, where the oil has run out and he will ask himself what is wrong, doing his level best to avoid the honest admission that his method is wrong and trying hard to believe against conviction that even now good advertising may bring him to the front. In the rush of competitive business the public mind is so set upon this method of attraction that it has come to demand it. The statement is made and can be established that two-thirds of the readers of Scribner's, Munsey's, McClure's and the long list of magazines first read thoroughly the long line of clever ads of which they are largely composed, costing thousands upon thousands of dollars for the investor, then take up the reading matter.

The Reason

MUST REST ON THE FACT that the bulk of such work is done by men who make it a study, by experts, made so largely because it has been demonstrated to them that buying advertising is equally as important as buying goods. It rests on the fact that they are written in the cleverest and best of good English; that the cuts fully equal those telling any story of every day magazine work; that they attract first and not last; that they are brought to that high grade of perfection where it is a common query, "Have you seen So and So's advertisement this month?"

The Merchant's Audience

IS FOUND IN THE PUBLIC, through the medium of the newspaper or periodical, just as truly as it is ever found over the counter, and to better advantage if he writes as he talks, and that is the true test of good advertising. The estimate of a business man's character is largely formed on the utterances contained therein. It is a channel of silent salesmen through which course very many purchases, unknown at the time, but as surely consummated as are others after hours of work over the counter.

Three Good Parts

CONSTITUTE CLEVER ADVERTISING—and they are good language, good cuts and good typography. There is everything in the simplicity and truthfulness of the statements made; there is much in that every cut bears directly on the subject matter of the language used; there is ready recognition in the continued use of the same strong plain type in every article set up. In five minutes' study a merchant may learn all he ever need know as to style, size or point of type necessary in his business, or if he does not care to carry it in mind cut out of others' work what is suitable and paste above the desk for reference.

The Waste

IN ADVERTISING IS ENORMOUS, and arises almost entirely from lack of that attention and respect that attaches to other—and to every other—part of his business. It is the hardest work in the world for many merchants or their employees to acquire even fairly decent respect for their own advertising, let alone the work of others. We cannot believe in the serious side, the dollars and cents of it; we either are not broad enough or the fact may be largely the result of association in our bringing up in the business. The result is in very many cases our labor is lost.

Leave Out the Cost

OF GOODS ADVERTISED as an element of the work itself. This is one of the great drawbacks to men who are unfortunately or unintentionally narrow. A \$2 ad. for a 25-cent article is just as good as a 50-cent ad. for a \$5 article—and may be much better. Get the customer in the house. He may want the little thing and a dozen other good purchases before he leaves you. Cost of any article advertised cannot be considered for a moment. It's a part of the general expense, should have an account of its own, but should go where all other expense goes at the end of the year.

Convince Customers

OF NEW GOODS CONSTANTLY ARRIVING. No one thing adds so much to their confidence as the belief that you never for a moment forget their interests and that if perchance you are out of some one thing to-day they are sure to get it to-morrow. No merchant need buy more than he otherwise would to have goods arriving every day in the year, and in this day of quick competition it is folly to be out of various lines day after day, saving the order for a friendly salesman at the expense of customers. If you have the good feeling—and we all have it—for the salesman have the necessary number of 10-cent Rubber Stamps made and on each order sent in it will read "Credit Jones," "Credit Salesman," &c. We have found this more than satisfactory to the traveler; indeed, in two or three cases, he furnished the Rubber Stamp.

Another Number

WILL CLOSE THIS SERIES, and with your kind indulgence will be devoted to the preparation of advertisements, the proper person qualified for it and the necessary qualifications.

A PERPLEXING PUBLICITY.

Geo. M. Evenson of Evenson Bros., Hardware merchants, St. Peter, Minn., some of whose ideas in regard to advertising have been set forth in our columns from time to time and who is the author of a booklet on making advertising cuts by a cheap process, advises us that he has received a great many requests for specimens of his advertising and inquiries as to his charges for writing advertisements. While Mr. Evenson would like to help merchants in their advertising he states that he is too busy a man to comply with these requests or take up the matter of preparing advertisements, and suggests that those who wish to inspect his advertising might subscribe for the St. Peter Herald, a weekly paper published at \$1.50 a year. This paper appears weekly and every issue contains the firm's announcement, the advertisement being different each week and often containing cuts prepared by the process referred to above.

The business of Ed. Burnap, Almena, Kan., has been purchased by T. J. McLain, who is continuing at the old stand.

J. W. McCallum, Linden, Ind., has been succeeded by McCallum & Hopewell. The firm are now erecting a two-story brick storeroom, 23 feet wide by 120 feet in length, which they expect to occupy about January 1.

Peter Bubb has purchased the interest of C. A. Bergfried in the retail business of Bergfried & Van Peyma, Leavenworth, Kan., and the style has been changed to Bubb & Van Peyma.

Among the Hardware Trade.

Fred. Schwendiman & Co. is the style of a new firm at Teton, Idaho. In addition to Shelf Hardware they are handling Stoves, Tinware and Agricultural Implements.

Abel & Smith, Decatur, Tenn., are making a 30-foot addition to their store and putting in a glass front. With other improvements their establishment will be much more attractive and convenient than heretofore.

Shepard & Foster, Joplin, Mo., dealers in Shelf Hardware, Stoves, Tinware, Queensware, Furniture, &c., have enlarged their building and it now comprises three floors 40 x 100 feet. They refer to trade as excellent.

Murphy & Kruse have lately opened a store at Marshfield, Ore., carrying Shelf Hardware, Stoves, Tinware, Agricultural Implements, Sporting Goods, &c. They are also conducting a tinning and plumbing shop.

Fire recently burned out the two upper stories, occupied by lithographing and printing concerns, of the building the remainder of which is tenanted by the Enos & Sanderson Company, wholesale and retail Carriage Makers' and Blacksmiths' Supplies, Heavy Hardware and Iron and Steel, 41 and 43 Carroll and 17 Ellicott street, Buffalo, N. Y. The stock of the company, while not touched by the flames, was damaged by water.

D. L. Baughman, retailer of General Hardware, Implements, Buggies, &c., Albion, Ind., is contemplating the erection of a building for the accommodation of his business.

J. H. Leachman and R. W. Kennedy, under the style of Leachman & Kennedy, have succeeded Long Bros. and H. J. Mugler in the Hardware, Stove and Tinware business at Grafton, W. Va.

The Hardware store of Royal D. Amy, Council Bluffs, Iowa, was visited by burglars on the 19th ult. and robbed of over \$200 worth of Pocket Cutlery, Razors, Revolvers, &c.

Kenyon & Tallman is the name of a new firm at Vanhornsville, N. Y. They are Tin, Copper and Sheet Iron workers and dealers in Hardware, Farming Implements, Groceries, &c.

John Masbaum, in the general merchandise business at North Crandon, Wis., is erecting a new building, which will be occupied only by his Hardware and Tinware stock.

O. R. Jones, Sebattus, Maine, who carries on a general store business, handling Hardware, Tinware, Paints and Oils in connection with other goods, is putting up a storehouse in the rear of his establishment. The structure is 50 x 15 feet in dimensions and is necessitated by Mr. Jones' expanding trade.

Trade Items.

SIMONDS MFG. COMPANY, Fitchburg, Mass., have issued an attractive hanger, 21 x 14 inches, in which they call attention to the favor with which their goods have been received in the following terms: "The Simonds Mfg. Company have received bronze, silver and gold medals, diplomas and highest awards in all State, interstate and international expositions where their goods have been exhibited. But to them the highest badge of esteem is the approving stamp of public opinion of two hemispheres placed on their products."

In an advertisement in this issue an illustration appears of the Neverslip Ice Creeper, put on the market by G. W. Rush & Co., Altoona, Pa. This Creeper is referred to as adjustable and made entirely of Steel. It will be observed that it is suggested as a good side line for travelers in the Northwest and Canada.

GRAEF & SCHMIDT, 107 Chambers street, New York, importers of fine Cutlery and sole agents in the United States for J. A. Henckels, Solingen, Germany, are displaying some beautiful new examples of Cutlery in various forms, in addition to their regular lines. They have in stock 100 new styles of Scissors, Manicure, Razor and combination cases, containing Razor Sets and Manicure outfit combined. There are also Workboxes of different kinds. The cases, large and small, are in differ-

ent shapes, some very unique, and are made of fine leathers in different colors, such as genuine Russia, seal and alligator, fine calf skin, pig skin, &c., lined with silk, satin, velvet, &c. There are also many new Pocket Knives in upward of 100 styles, and some new patterns of Scissors and Razors, such as are sold in regular packages. The goods referred to above are of the well-known Twins brand, and all suitable for high grade holiday trade.

E. BISSELL & Co., 12 Murray street and 15 Park place, New York, in a Special Notice on another page call attention to trade sales on November 23 and 24. These cover Table Cutlery, Carvers, Butcher Knives, Silver Plated Flatware, Shears, &c., comprising a large assortment of Table Knives and Forks of desirable patterns direct from the manufacturers. The above goods are referred to as worthy of the attention of the trade and holiday buyers. The sale on the 23d will also include over 10,000 pairs of ladies' and gentlemen's Polished and Nickel Plated Steel Ice Skates.

Price-Lists, Circulars, &c.

FRANK MOSSBERG COMPANY, Attleboro, Mass.: 1900 catalogue of Bicycle Bells and Wrenches, including the new Mossberg Chime Handle Bar Bell.

JOHN DUNLAP COMPANY, Pittsburgh, Pa.: Forty-four page catalogue of Bluestone Enameled Ware.

CORBIN CABINET LOCK COMPANY, New Britain, Conn.: Illustrated booklet on "Modern Pin-Locking Mechanism," as applied to a new line of Locker, Chest, Drawer, Wardrobe, Cupboard and Padlocks, with especially small keys, ball bearing cylinders, and arranged for master and grand master keying.

WIARD FLOW COMPANY, Batavia, N. Y.: Illustrated catalogue of Plows, Sulky Rake, Spading Harrow, Disk Harrow, Adjustable Weeder, Corn Planter, Iron Chimney Cap, &c.

Miscellaneous Notes.

Non-Corroding Bolts, Nuts and Washers.

U. T. Hungerford Brass & Copper Company, 121 Worth street, New York, are making a specialty of bolts, nuts and washers and cap and set screws, made of brass, Muntz metal, Tobin bronze and pure copper, which are being extensively used by ship and engine builders; also by manufacturers of machinery for pulp and paper mills, acid and chemical works, acetate of lime and salt works, and wherever it is desirable to use bolts, nuts and washers that will not corrode by the action of acids or impregnated waters.

Improved Sunburst Lamp.

The Meriden Bronze Company, Meriden, Conn., and 30 Park place, New York, have made a number of important changes in their Sunburst lamp. This lamp is made of nicked brass, burns kerosene, and gives a beautiful incandescent flame of great candle power. The gallery and lighting process has been greatly simplified, and a bright incandescent flame is obtained in about half a minute. The lamp is much cooler than before, and at any time the round glass chimney with parallel sides can be lifted from the lamp with the naked hand by taking hold of the lower portion of the chimney. The volume of light is controlled by the thumb screw wick lift, as in an ordinary oil lamp, but the effect is similar to that of the Welsbach mantle, as used with gas, so that any one away from a gas supply can have the same character of light from kerosene. At the bottom of the standard is a rod with a small ball head, which runs up through the center of the lamp and raises or lowers what is called a gassifier—a cone shaped metal cap that serves to gassify or vaporize the oil fed by the wick. When lighting the lamp the gassifier is raised slightly and the circular wick lighted, as in an ordinary lamp, the product of this ignition being a luminous or yellow flame. After burning a few seconds the cone is heated and lowered to its normal position, and by changing the oil vapor into gas produces, with the aid of a mantle, a beautiful white, incandescent light of high candle power.

Spencer Automatic Machine Screw Company.

The Spencer Automatic Machine Screw Company of Hartford, Conn., who have been engaged the past five years in the manufacture of special machine screw work for bicycle, electrical and other mechanical lines, have added standard headless and square head set screws to their production and carry a line of these screws of all listed sizes in stock.

National Manumotor.

The National Cycle Mfg. Company, Bay City, Mich., are making to order a manumotor tricycle for cripples who cannot walk, as here illustrated. The machine has



Tricycle Manumotor for Cripples

three 28-inch pneumatic tired bicycle wheels and a frame construction suitable for such a device of Shelby seamless cold drawn steel tubing. Power is transmitted through three sets of gears and is applied by the rider with the hands. Steering is accomplished by either feet or body, according to the physical condition of the rider. The power transmission is by means of gears, of which there are three sets, ball bearings being used throughout, even in the handles of the driving cranks. Each rear wheel

the individual, as does the length of the driving cranks. A similar machine can be furnished with a steering appliance suitable for cripples who have no control of their lower limbs.

Corbin Pin Locking Mechanism.

Corbin Cabinet Lock Company, New Britain, Conn., have introduced some new features in their line of cabinet and other locks in the way of ball bearing cylinders, as here illustrated. One improvement is the introduction of the master cylinder into the same shell with the individual key plug, which gives a secure and compact master key arrangement. Another important innovation is the adoption of ball bearings in the cylinders, thus minimizing the friction and consequent wear and greatly increas-

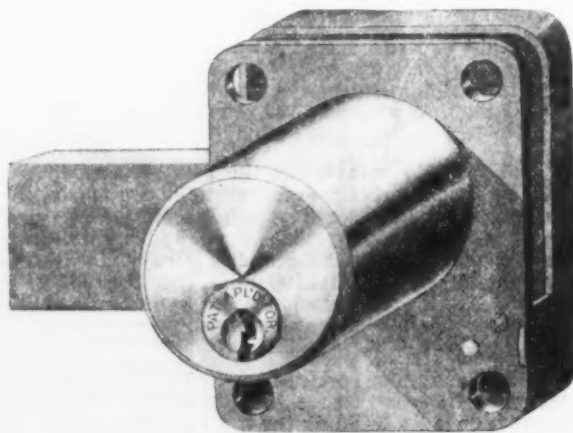


Fig. 1.—Master Keyed Locker Lock.

ing the ease of operation. The accompanying illustrations thoroughly explain these improvements. The cuts are full size, and it will be noticed that both the shape and size of the cylinder are varied according to the place where it is to be used. The number of the pins in the different styles varies from three to six, and the form of the attachment at the back is altered to suit the character and position of the mechanism of the bolt it throws. The outer shell also is turned to fit the place where it is put, ranging from the heavy cylindrical form used in cabinet locks, turned from a round bar, to a mere envelope for the keyway and locking mechanism in the padlock, the case of the padlock furnishing the strength to resist assault.

Fig. 1 illustrates a new master keyed locker lock, and Fig. 2 a master keyed chest lock. Attention is drawn by the manufacturers to the irregular form of the keyhole,

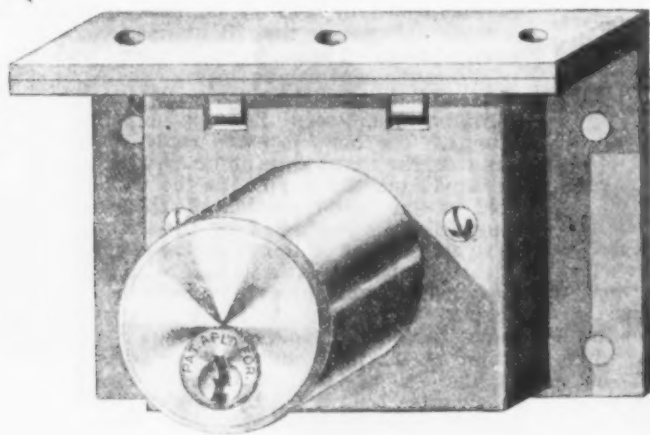


Fig. 2. Chest Lock, with Master Key.

driving shaft has two sets of ball bearings in the frame, the ball bearings being similar to those used in the regular line of National bicycles, while the gears are made specially for this machine. The seat is neatly upholstered with leather on a wood frame. Back of the rider is a place for crutches, so arranged that the crutches will not rattle against the frame or each other. The machine is steered by the front wheel and is regularly geared up to 43 inches, which is practically the limit. On smooth pavements riders are said to be able to accompany bicyclists at moderate speed. Rests for the feet on the front forks are provided, as shown, the height varying with

the projections or pin guards on each side reaching the center, making it impossible for a skeleton key or thin flat tool to be thrust into the keyway and raised to lift the tumblers. The key plug is made from a solid bar, and the keyway cut along its entire length, requiring a key that will fit it with exactness. Not only must the key accurately engage the keyway, but the wards must be of exactly the right form. The interlocking of the key and its channel cut in the plug prevents any tilting of the key or up and down motion that would compensate for any imperfections, and the cuts along its bit must raise the pins to just the right height or it will not operate the lock.

Fig. 3 shows the interior of one of the master key padlocks, and a sectional view of the locking mechanism exhibiting its workings. The circular pockets extend into the key plug in the center, and at the bottom of each pocket rests a ball, the two pins in each pocket being held in contact with it by the driver, surmounted by a coiled spring. The master cylinder encircles the key plug, the pockets passing through one side of it, and the pins and drivers extending through the shell and master cylinder into the key plug form bolts that hold all parts firmly locked and immovable. No key except one accurately fitted to the lock will release the plug alone, but a master key, with entirely different bitting, bringing the tops of

to facilitate the inspection of the kits of the jackies, in gymnasiums, armories and club houses, and in mercantile establishments where many persons are employed; chest locks, drawer locks and cupboard locks—all sorts of cabinet locks for use where security and a measure of privacy is desired, coupled with relief from annoyance caused by loss of keys, and insuring ready entrance to persons in authority. The latest addition to the list is the new form of No. 0767 locker lock, shown in Fig. 1, a particularly simple and desirable form of lock for the purpose.

But not all the Corbin pin-tumbler locks contain the master key cylinder, as this function is not required in ordinary circumstances, where locks are applied for

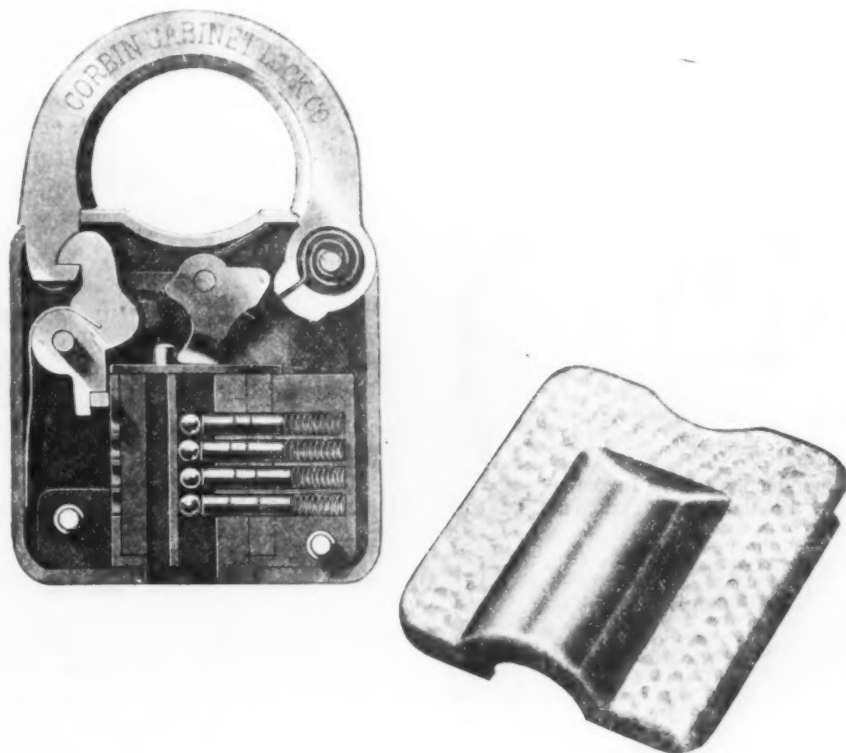


Fig. 3.—Master Keyed Padlock, Showing Pins in Position.

the second row of pins in alignment with the outer surface of the master cylinder, as in Fig. 4, will permit the key plug and the master cylinder to revolve together and produce the same effect as the operation of the individual key. Still another change is effected in the same lock by a third series of pins which a grand master key, with bittings different from either the individual or the master key, brings into play upon the master cylinder and still farther extends the field for master key work. No matter where the lower divisions in the pins occur, so long as the distance from the master key to the top of the second series of pins is unchanged, the same master key can be used,

purely individual use. The greater number of the cylinders used consist of the key plug and the shell inclosing it and holding the pins. All Corbin locks of this class contain balls (generally of German silver, although both phosphor-bronze and steel are used) to receive the impact of the key and lessen the friction. Each pin is balanced directly upon a ball, and when the key is inserted the ball

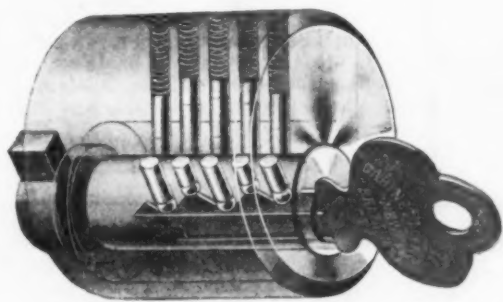


Fig. 4.—Master Cylinder with Individual Key Inserted.

and thus sets can be made with any number of individual keys, no two passing the same lock, but all locks operated by the same master key; so, too, a combination of several sets may be made with the individual keys all different, different master keys for the various sets, and one grand master key to pass all.

The master key work in this varied line of locks the makers refer to as having reached a high degree of development in this particular field, and mention is made of the importance of having padlocks in sets for use in yards of factories and railroads, and for contractors' tool houses; wardrobe locks and locker locks for use on men of war,

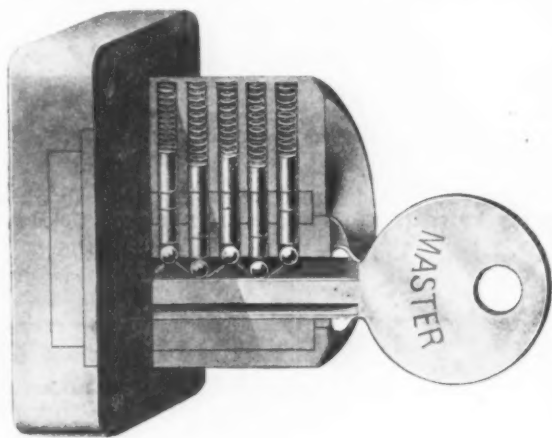


Fig. 5.—Wardrobe or Cupboard Lock, Master Key Inserted.

rolls easily in its place and imparts a directly upward motion to the pin instead of forcing it up by an obliquely directed pressure. There is almost no resistance when the key is introduced or withdrawn, which obviates the sticking of keys in the key plug and greatly reduces the wear. It will be seen the keys for these locks are even smaller than ever before.

Haynes & Manning are a new Hardware firm at Washington C. H., Ohio, handling Shelf Hardware, Stoves and Tinware.

Cutlery and Tool Grinders.

Schofield & Co., Freeport, Ill., are manufacturing Schofield's Scientific knife and scissors grinder and the

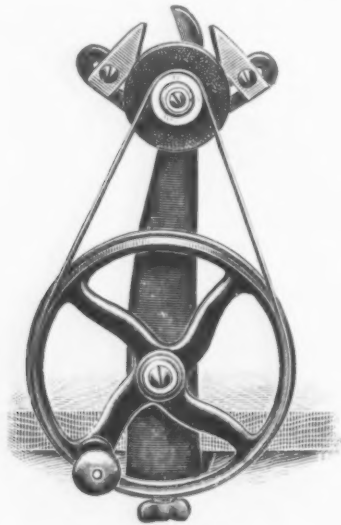


Fig. 1.—Schofield's Scientific Knife and Scissors Grinder.

Acme knife and tool grinder, as shown in the accompanying engravings. Fig. 1 illustrates the knife and scissors

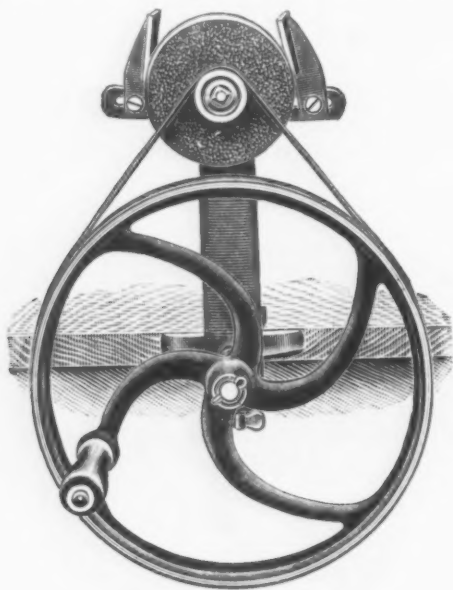


Fig. 2.—Acme Knife and Tool Grinder.

grinder, which is designed for use in the family for sharpening knives, scissors and similar small articles in daily



Fig. 1.—Wire Spoke for Motor Vehicle or Sulky.

use. It has a 2-inch corundum wheel and a capacity for fine work. The frame is japanned. On either side of the wheel are rests, which can be set at any angle to grind the blade thin or otherwise. By holding the flat side of a scissors blade against the rest at the top of the wheel and passing the blade back and forth from heel to point it grinds it to the correct bevel the whole length of the blade. Fig. 2 represents the Acme knife and tool grinder, which is built on a larger scale. The frame is stronger, driving wheel 12 inches in diameter and the emery grinding wheel is 4 inches in diameter with a face $\frac{3}{4}$ inch wide. This machine is intended for sharpening chisels, planes and any carpenters' tools, particularly such as require a true bevel. A feature of these grinders is that they are portable and if necessary after use can

be hung up out of the way. The Acme grinder is especially recommended to butchers, carpenters, hotel and restaurant keepers and any who use cutlery or edge tools, particular attention being called to the moderate cost.

Steel Bushel Basket.

The accompanying cut represents a steel bushel basket put on the market by the Metallic Basket Company, Rochester, N. Y. The basket is made of sheet metal galvanized and of light weight. The corrugation results in greater strength and the galvanizing is to prevent corrosion. The basket is referred to as being water tight and as adapted for carrying any material, hot or cold, but especially for handling ashes, grain or produce. The



Steel Bushel Basket.

basket is designed to retail at 75 cents. The company make baskets of this kind in $\frac{1}{2}$ and $1\frac{1}{2}$ bushel sizes, in addition to the one illustrated.

Spokes and Nipples for Motor Vehicles and Sulkies.

The Wire Goods Company, Worcester, Mass., are manufacturing wire spokes and brass nipples, both heavily nickeled, for sulkies and motor vehicles, as here illustrated. A complete line is regularly made in the following standard sizes—viz., Nos. 3, 5, 6, 9, 10 and 11 wire, having centers swaged to Nos. 6, 7, 8, 11, 12 and 13 wire gauge, with 28, 32, 32, 40, 48 and 56 thread respectively. A special grade of wire is used and mention is made by the company of their process for heading and bending the spokes so as not to crystallize the stock in any way or impair the strength of the spoke. If preferred straight spokes at a lower price can be furnished in the above sizes with two additional sizes, Nos. 8 and 12. We are advised they can make either swaged or straight spokes of any length or diameter in any quantity to order. Brass nipples, Fig. 2, are supplied to fit these threads, the nipples being $\frac{3}{4}$, $\frac{7}{8}$ or 1 inch long and of varying diameter to suit the different spokes.

W. H. Heim, under the style of D. Heim's Son, has succeeded D. Heim's Sons, Sunbury, Pa., in the wholesale and retail Hardware and plumbing business. The business was established in 1870 by Major D. Heim, at which time the present proprietor occupied the position of clerk.



Fig. 2.—Nipple for Spoke.

The store has lately been enlarged and a number of improvements made with a view to bringing it up to date

in its appointments. Mr. Heim will add House Furnishing Goods and two or three other lines not yet decided on next spring.

Great American Ball Bearing Lawn Mower.

Supplee Hardware Company, Philadelphia, Pa., are manufacturing the Great American ball bearing lawn mower, here illustrated. Fig. 1 represents the mower ready for use. Fig. 2 shows the adjustment of the ball bearings in a sectional view and Fig. 3 illustrates the cone or ball race and cap. The mower has a patent adjustable cone so designed as to give the best bearing surface with a minimum amount of friction. The steel balls of high grade are placed in the dust proof steel covered cup and such slight wear as may in time occur can be taken up when desired by slightly turning the steel pin furnished for the purpose and used in connection with a pinhole in the shaft. The driving wheels are 10 inches in diameter and are entirely covered about $6\frac{1}{2}$ inches, so

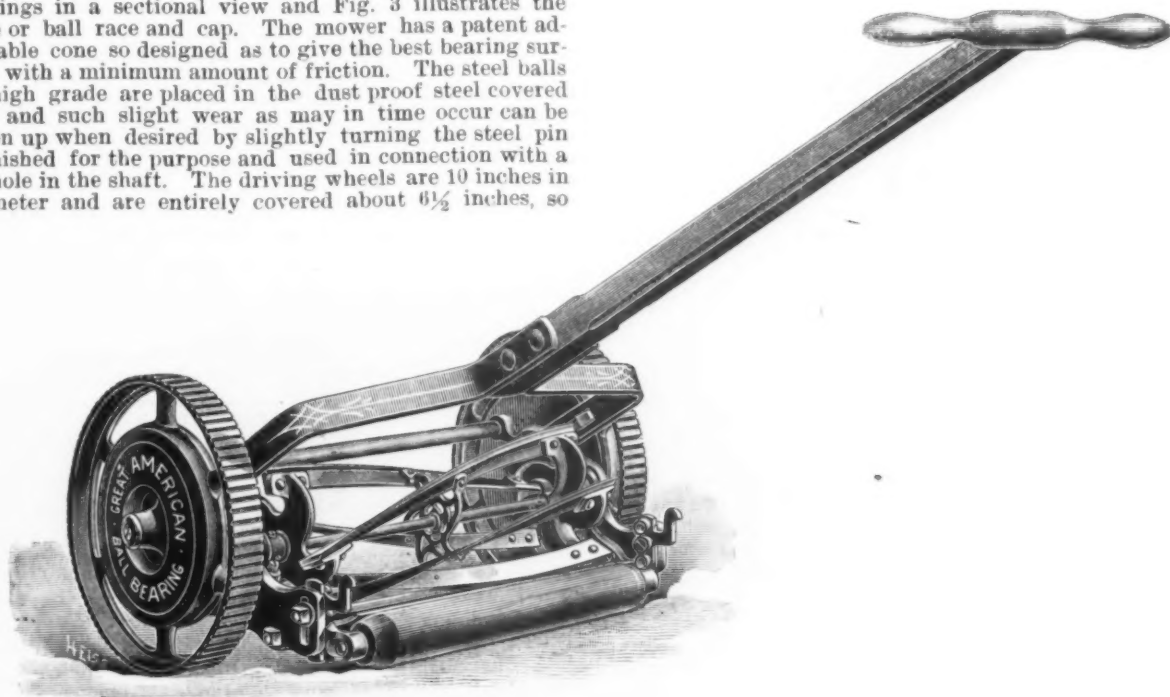


Fig. 1.—Great American Ball Bearing Lawn Mower.

that grass cannot enter the motive power, and the bearings are said to be as nearly dust proof as possible. The revolving cylinder is 6 inches in diameter, has five solid cast steel patented cutting knives, hardened and tempered

referred to by the makers as adjustable in any direction and will hold firmly any style of bicycle frame. The stand is said to be well made, of the best materials, and the clamps are felt lined to prevent injury to the frame

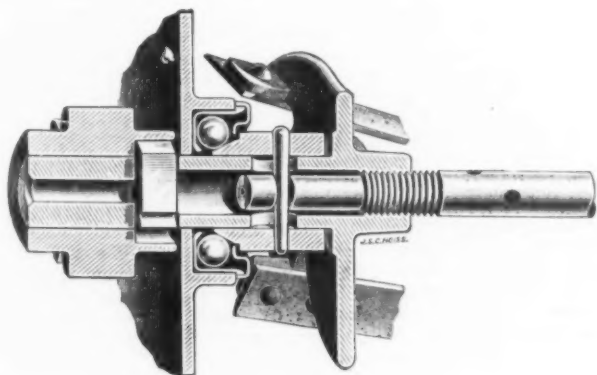


Fig. 2.—Sectional View of Ball Bearing Adjustment.

in oil and protected by malleable supports and a rod passing through the cylinder. The dead knife or cutting blade is of improved shape and solid cast steel and can be regu-

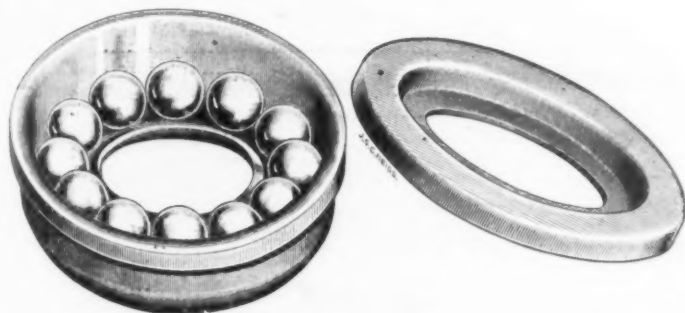


Fig. 3.—Cone, Ball Race and Cap.

lated to cut the grass from $\frac{3}{8}$ to $1\frac{3}{8}$ inches from the ground as desired. The ratchets or pawls are cast steel, hardened and tempered, and are noiseless in action. The mower is made in 15, 17, 19 and 21 inch sizes.

Star Bicycle Stand for Repair Men.

Hubbell Bros., Kelly's Corners, N. Y., are manufacturing the Star bicycle stand, as here shown. It is designed for the use of repair men or exhibition purposes. It is



Star Bicycle Stand for Repair Men and Exhibition Purposes.

enamel. A tray for holding tools and parts is a part of the equipment and is adjustable at varying heights.

B. K. Redick, Jenera, Ohio, has completed an addition to his store. It is two stories high and 37 x 40 feet in dimensions. The new structure will be occupied by his Shelf Hardware and Stove stock, the old store being given up to Buggies, Farm Implements, &c. The enlarged establishment has a frontage of 60 feet and puts Mr. Redick in excellent position to look after his growing trade.

Esmond Saddle.

The Esmond Cycle Saddle Company, 78-80 Wall street, New York, are manufacturing the Esmond saddle for bicycles, as here shown. It differs from other saddles in that it is free to swing backward and forward, and to rock laterally as the movement of the machine or the rider requires, being free to respond to every movement. Yet by reason of the rider's weight, which is supported by articulated links below the point of attachment, a firm

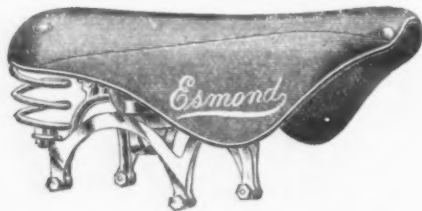


Fig. 1.—Esmond Bicycle Saddle.

and secure seat is obtained. The saddle is slung from an elliptical bar attached to the L pin, so that the rider is said to glide over obstacles and the vibration and shocks sustained by the machine are not communicated to him. In addition to this swinging motion from back to front it has a slight rock from side to side, which allows it to yield to the pressure of the leg muscles in making the stroke on the pedals. Fig. 1 shows the saddle as sent out, Fig. 2 illustrating the direction of pedaling pressure as contrasted with a curved line on a saddle that is rigid. The manufacturers refer to it as answering to every movement of the rider, swaying with his every motion, completely doing away with friction and saddle soreness, it is claimed. As an evidence of their faith in the saddle the

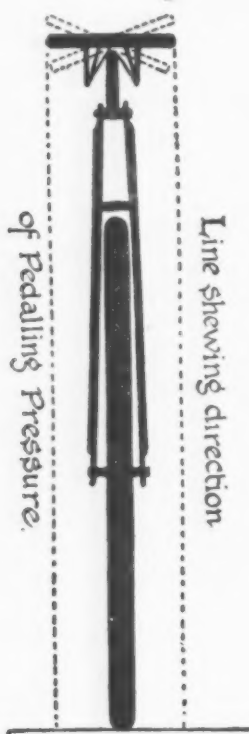


Fig. 2.—End View of Saddle and Wheel.

company offer to send one to any United States address on receipt of the price, \$5, and if after a ten days' trial the owner wishes to return it the full amount paid will be refunded if saddle is in good condition.

Indianapolis Hardware Company, a corporation with a capital of \$100,000, have succeeded Hildebrand Hardware Company and Charles L. Wayne & Co. at Indianapolis, Ind. The officers of the company are as follows: John H. Dilks, president; P. M. Hildebrand, vice president; Newton Claypool, treasurer, and Charles L. Wayne, assistant treasurer and secretary. The company will wholesale and retail Builders' and Shelf Hardware, Guns and Ammunition, Tinware, &c. They are intending to

rearrange their present new quarters at 35 South Meridian street and 23 and 25 East Pearl street and install sample rooms for Mantels and Hotel Ranges.

Karl Bros., in the Hardware business at New Prague, Minn., have opened a branch store at Wesley, which will be conducted under the same style.

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Current Hardware Prices.

REVISED NOVEMBER 14, 1899.

General Goods.—In the following quotations General Goods—that is, those which are made by more than one manufacturer—are printed in *Italics*, and the prices named represent those current in the market as obtainable by the fair retail Hardware trade, whether from manufacturers or jobbers. They apply to such quantities of goods as are usually purchased by retail merchants. Very small orders and broken packages often command higher prices, while lower prices are frequently given to larger buyers.

Special Goods.—Quotations printed in the ordinary type (Roman) relate to goods of particular manufacturers, who are responsible for their correctness. They usually represent the prices to the small trade, lower prices being obtainable by the fair retail trade, from manufacturers or jobbers.

Cut Prices.—In the present condition of the market, while many advanced prices are announced by the manufacturers, lower prices are often made by the wholesale trade who have stocks on hand purchased at former quotations.

Names of Manufacturers.—For the names and addresses of manufacturers see the advertising columns and also THE IRON AGE INDEX SUPPLEMENT (April 6, 1899), which gives a classified list of the products of our advertisers and thus serves as a DIRECTORY of the Iron Hardware and Machinery trades.

Standard Lists.—A new edition of "Standard Hardware Lists" has been issued and contains the list prices of many leading goods.

Additions and Corrections.—The trade are requested to suggest any improvements with a view to rendering these quotations as correct and as useful as possible to Retail Hardware Merchants.

Adjusters Blind—

Domestic, $\frac{1}{2}$ doz. \$3.00...33 $\frac{1}{2}$ ¢@33 $\frac{1}{2}$ ¢@10 $\frac{1}{2}$ ¢
North's...10 $\frac{1}{2}$ ¢
Zimmerman's—See Fasteners, Blind.

Window Stop—

Ives' Patent...25¢
Taplin's Perfection...50¢

Ammunition—See Caps, Cartridges, Shells, &c.

Anvils—American—

Eagle Anvils...7 $\frac{1}{2}$ ¢@7 $\frac{1}{2}$ ¢
Hay-Budden, Wrought...9 $\frac{1}{2}$ ¢@9 $\frac{1}{2}$ ¢
Horseshoe brand, Wrought...9 $\frac{1}{2}$ ¢@9 $\frac{1}{2}$ ¢
Samson...7 $\frac{1}{2}$ ¢@7 $\frac{1}{2}$ ¢
Trenton, Wrought...8 $\frac{1}{2}$ ¢@8 $\frac{1}{2}$ ¢

Imported—

Armstrong's Mouse Hole...9 $\frac{1}{2}$ ¢@9 $\frac{1}{2}$ ¢
Pater Wright's...9 $\frac{1}{2}$ ¢@9 $\frac{1}{2}$ ¢

Anvil, Vise and Drill—

Millers Falls Co., \$18.00...20 $\frac{1}{2}$ ¢

Apple Parers—See Parers, Apple, &c.

Augers and Bits—

Common Double Spur, 60¢@10¢@10¢...
Boring Machine Augers...60¢@10¢@10¢...
Car Bits, 12-in. twist...60¢@10¢@10¢...
Jennings' Pattern:
Auger Bits...60¢@10¢@10¢...
Ford's Auger and Car Bits...40¢@10¢@10¢@10¢...
Forster Pat. Auger Bits...25¢
C. E. Jennings & Co.:
No. 10 ext. lip. R. Jennings' list...40¢@10¢@10¢...
No. 30. R. Jennings' list...50¢@10¢@10¢...
Russell Jennings...25¢@10¢@10¢...
L'Hommedieu Car Bits 15¢@10¢@10¢@10¢...
Pugh's Jennings' Pattern...35¢
Snell's Auger Bits...60¢
Snell's Bell Hanger Bits...50¢
Snell's Car Bits, 12-in. twist...60¢
Wright's Jennings Bits (R. Jennings' list)...50¢

Bit Stock Drills—

Standard List...60¢@10¢@10¢@70¢@5¢

Expansive Bits—

Clark's small, \$18; large, \$20...50¢@10¢

Lavigne's Clark's Pattern, No. 1...50¢@10¢

Stear's No. 1, \$20; No. 2, \$18...40¢@10¢@5¢

Swan's...40¢@10¢@10¢

Gimlet Bits—

Common Double Cut, gro. \$2.75@3.25

German Pattern...gro. \$5.00@5.50

Double Cut, makers' lists...50¢@50¢@10¢

Hollow Augers—

Bonney's Adjustable, $\frac{1}{2}$ doz...\$16.50

Dougllass...33 $\frac{1}{2}$ ¢@33 $\frac{1}{2}$ ¢@10 $\frac{1}{2}$ ¢

Ship Augers and Bits—

Ford's...40¢@10¢@10¢@10¢

Snell's...15¢@10¢@10¢@10¢

L'Hommedieu's...15¢@10¢@10¢@10¢

Watrous's...40¢@10¢@5¢

Awl Hafts, See Hafts, Awl.

Awls—

Brad Awls:
Handled...gro. \$2.75@3.10

Unhandled, Shouldered gro. 65¢@66¢

Unhandled, Patent...gro. 66¢@70¢

Peg Awls:
Unhandled, Patent...gro. 51¢@54¢

Unhandled, Shouldered gro. 65¢@70¢

Scratch Awls:
Handled, Common...gro. \$3.50@4.00

Handled, Socket...gro. \$11.50@12.00

Awl and Tool Sets—See Sets, Awl and Tool.

Axes—

First Quality, best brands...\$6.00@6.25

First Quality, other brands...\$5.50@5.75

Jobbers' Special Brands:
Good Quality...\$5.00@5.25

Best Quality...\$5.50@5.75

Cheap, Handled Axes...\$4.75@5.00

Beveled, add 25¢ doz.

Note.—Jobbers' prices are now usually lower than the manufacturers.

Axle Grease—See Grease, Axle.

Axles—

Concord, loose collar...6 $\frac{1}{2}$ ¢ 6¢

Concord, solid collar...6 $\frac{1}{2}$ ¢ 6 $\frac{1}{2}$ ¢

No. 1 Common...5¢ 6 $\frac{1}{2}$ ¢

No. 1 $\frac{1}{2}$ Com. New Style...6 $\frac{1}{2}$ ¢ 6 $\frac{1}{2}$ ¢

No. 2, Solid Collar...6 $\frac{1}{2}$ ¢ 6 $\frac{1}{2}$ ¢

Nos. 7, 8, 11 to 14...50¢@10 $\frac{1}{2}$ ¢

Nos. 7, 8, 11 to 14, 100 sets...60 $\frac{1}{2}$ ¢

Nos. 15 to 18...50 $\frac{1}{2}$ ¢

Nos. 19 to 22...60¢@10 $\frac{1}{2}$ ¢

Boxes, Axle—

Common and Concord, not turned...lb. 5¢

Common and Concord, turned...lb. 6¢

Half Patent...lb. 9¢

Balances—

Caldwell low list...25 $\frac{1}{2}$ ¢

Foullman's...62 $\frac{1}{2}$ ¢

Spring—

Spring Balances...50¢@50¢@50¢

Chatillon's Light Sizing Balances...40¢@10 $\frac{1}{2}$ ¢

Chatillon Straight Balances...40 $\frac{1}{2}$ ¢

Chatillon Circular Balances...50 $\frac{1}{2}$ ¢

Chatillon's Large Dial...30 $\frac{1}{2}$ ¢

Barb Wire—See Wire, Barb.

Bars—

Steel Crowbars, 10 to 40 lb., per lb...3 $\frac{1}{2}$ ¢@4¢

Beams, Scale—

Scale Beams, List Jan. 12, '92...35¢@40¢@5¢

Chatillon's No. 1...30 $\frac{1}{2}$ ¢

Chatillon's No. 2...40 $\frac{1}{2}$ ¢

Beaters—

Standard Co.:
No. 5 Steel Handle Diver...\$6.50

No. 10 Cast Handle Diver...\$8.00

No. 10 Steel Handle Diver...\$8.00

No. 15 Extra Heavy Steel Handle...\$15.00

Rival, $\frac{1}{2}$ gro...\$10.00

Taplin Mfg. Co.:
No. 50 Small Family size...\$4.50

No. 100 Regular Family size...\$8.00

No. 102 Regular Family size, tinned...\$9.50

No. 150 Large Family size...\$12.00

No. 152 Large Family size, tinned...\$17.00

Lyon's Standard size...\$8.75

Wonder (S. S. & Co.)...\$7.50

Bellows—

Blacksmith—

Standard List...70¢@70¢@5¢

Inch...30 32 34 36 38 40

Each...\$4.25 4.50 5.25 5.75 6.50 7.75

Extra Length:
Each...\$4.75 5.25 5.75 6.50 7.40 8.75

Molders—

Inch...9 10 11 12 14 16

Doz...\$6.75 7.25 8.50 9.50 12.00 14.50

Hand—

Inch...6 7 8 9 10 12

Doz...\$3.75 4.25 4.50 5.00 5.75 6.75

Bells—

Ordinary goods...75¢@10 $\frac{1}{2}$ ¢

High grade...70¢@70¢@10 $\frac{1}{2}$ ¢

Jersey...75¢@75¢@10 $\frac{1}{2}$ ¢

Texas Star...50¢@10 $\frac{1}{2}$ ¢

Door—

Gong, Yankee...55¢

No. 6, R. & E. Mfg. Co.'s...50¢@10 $\frac{1}{2}$ ¢

Lever and Pull, Sargent's...63 $\frac{1}{2}$ ¢@10 $\frac{1}{2}$ ¢

Hand—

Hand Bells, Polished...65¢@65¢@10 $\frac{1}{2}$ ¢

White Metal...65¢@65¢@10 $\frac{1}{2}$ ¢

Nickel Plated...50¢@60¢@10 $\frac{1}{2}$ ¢

Swiss...60¢@60¢@10 $\frac{1}{2}$ ¢

Miscellaneous—

Farm Bells...lb. 2¢@3¢

Steel Alloy Church and School...50¢@10¢@60¢

Wilmot & Hobbs Mfg. Co., Gongs...70¢

Belt—

Rubber—

Common Standard...70¢@10¢@75¢

Standard...60¢@10¢@70¢

Extra...60¢@60¢@10 $\frac{1}{2}$ ¢

High Grade...60¢@60¢@10 $\frac{1}{2}$ ¢

Leather—

Extra Heavy, Short Lap...50¢@10¢

Regular Short Lap...60¢@60¢@5¢

Standard...60¢@10¢@60¢@10¢@5¢

Light standard...70¢@10¢

Cott n—

Rosendale-Riddaway B. & H Co.:
Sph. x Band...60¢@10 $\frac{1}{2}$ ¢

Durable Bran...70 $\frac{1}{2}$ ¢

Bench Stops—See Stops, Bench

Benders and Upsetters,

Tire—

Green River Tire Benders and Upsetters...30 $\frac{1}{2}$ ¢

Ill. r. & Bolt Co...40¢@40¢@5¢

Stoddard's Lightning Tire Upsetters...40¢@50¢

Bicycle Goods—

Lane's Cycle Hanger...33 $\frac{1}{2}$ ¢@5¢

John S. Leung's Son's 1899 list:
Chain...50 $\frac{1}{2}$ ¢

Paris...50 $\frac{1}{2}$ ¢

Spokes...50 $\frac{1}{2}$ ¢

Tubes...60 $\frac{1}{2}$ ¢

Bits—

Auger, Gimlet, Bit Stock Drills, &c.—
See Augers and Bits.

Bit Holders—See Holders.

Blind Adjusters—See Ad-

justers, Blind.

Blind Fasteners—See Fast-

eners, Blind.

Blind Staples—See Staples,

Blind.

Blocks—Tackle—

Common Wooden...70¢@10¢@75¢@5¢

Eddy's Steel...60¢@10 $\frac{1}{2}$ ¢

Harts Steel...60¢@10 $\frac{1}{2}$ ¢

Ford's Star Brand, Self Lubricating...70 $\frac{1}{2}$ ¢

Hollow Steel, Ford's Pat. Star Brand...50¢@10 $\frac{1}{2}$ ¢

Lane's Patent Automatic Lock and
Junior...30 $\frac{1}{2}$ ¢

Stowell's Novelty, Mal. Iron...50 $\frac{1}{2}$ ¢

See also Machines, Hoisting.

Boards, Stove—

1899 List:
Zinc...30 $\frac{1}{2}$ ¢

Crystal and Embossed...40 $\frac{1}{2}$ ¢

Bolts—

Carriage, Machine, &c.—
Common, list Jan. 30, '95...50¢@50¢@10 $\frac{1}{2}$ ¢

Norway Iron, \$3.00, list Oct. 7, '94...75¢@75¢@10 $\frac{1}{2}$ ¢

Phila. Eagle, \$3.00 list...75¢@10¢@75¢@10¢@5¢

Bolt Ends, list Jan. 30, '95...60¢@10¢@5¢

Machine, list Oct. 1, '99...50¢@10¢@5¢

Note.—Jobbers' prices on Bolts are
now generally lower than manufacturers'.

Door and Shutter—

Cast Iron Barrel, Round Brass
Knob:
Inch...3 4 5 6 8

Per doz...\$0.33 .36 .45 .57 .80

Cast Iron Spring Foot:
Inch...6 8 10

Per doz...\$1.00 1.25 1.75

Cast Iron Chain, Flat, Japanned:
Inch...6 8 10

Per doz...\$0.85 1.20 1.50

Cast Iron Shutter, Brass Knobs:
Inch...6 8 10

Per doz...\$0.60 .90 1.15

Wrought Barrel Brass Knob:
Inch...3 4 5 6 8

Per doz...\$0.44 .50 .61 .70 1.28

Wrought Barrel...70¢@10¢@75¢

Wrought Barrel, Bronzed...50¢@50¢@10 $\frac{1}{2}$ ¢

Wrought Flush, B. K...60¢@80¢@70¢

Wrought Square Neck...60¢@10¢@10¢@70¢

Wrought Sunk...60¢@60¢@10 $\frac{1}{2}$ ¢

Ives' Patent Door...62 $\frac{1}{2}$ ¢@62 $\frac{1}{2}$ ¢@10 $\frac{1}{2}$ ¢

Stove and Plow—

Plow...50¢@10¢@60¢

Stove, list August 27, 1898...62 $\frac{1}{2}$ ¢@10 $\frac{1}{2}$ ¢

Tire—

Common, list Feb. 23, '95...60¢@60¢@10 $\frac{1}{2}$ ¢

Primers—
 Berdan Primers, \$1.00 50¢
 B. L. Caps (Sturtevant Shells) 50¢
 \$1.00 50¢
 All other primers \$1.10 @ \$1.12

Carpet Stretchers—
 See Stretchers, Carpet.

Cartridges—

B. B. Caps, Con., Ball Sngl. \$1.90
 B. B. Caps, Round Ball, \$1.12 @ \$1.18
 Blank Cartridges:
 22 C. F., \$5.50 10¢
 22 C. F., \$7.00 10¢
 22 cal. Rim, \$1.50 10¢
 22 cal. Rim, \$2.75 10¢
 Central Fire 25¢
 Pistol and Rifle 15¢
 Primed Shells and Bullets 15¢
 Rim Fire Sporting 50¢
 Rim Fire Military 15¢

Casters—

Red 60¢
 Plat 60¢
 Plate, part Brass 50¢
 Philadelphia 60¢
 Martin's Patent (Phoenix) 50¢
 Payson's Anti-Friction Furniture 70¢
 Payson's Anti-Friction Truck 70¢
 Standard Ball Bearing 45¢
 Tucker's Patent, low list 45¢

Cattle Leaders—

See Leaders, Cattle.

Chain—

American Coil, Full Casks:
 5-16 ¼ 5-16 ¾ 7-16 ¼ 9-16
 8-75 6-85 5-85 5-00 4-85 4-65
 ¼ ¾ 1 inch.
 4-50 4-40 4-30 4-20 cents per lb.
 Less than Cask lots add ¼¢ per lb.
 German Coil, list July 24, '97 60¢
 German Hatter Chain, list July 24, '97 60¢
 Trace, Wagon and Fancy Chains, list April, '98 50¢
 Jack Chain, list July 10, '98:
 Iron 60¢
 Brass 60¢
 Gal. Pump Chain 60¢
 Breast, Hitching and Rein Chains.
 Coverlaid Works 50¢
 Covert Mfg. Co.:
 Breast 85¢
 Halter 85¢
 Heel 85¢
 Rein 85¢
 Stallion 85¢
 Onella Company:
 Eureka Coll and Halter 60¢
 Niagara Coll and Halter 60¢
 Niagara Cow Ties 45¢
 Am. C. and Halters 50¢
 Am. Cow Ties 55¢

Chalk—(From Jobbers.)

Carpenters', Blue gro. 50¢
 Carpenters', Red gro. 40¢
 Carpenters', White gro. 35¢
 See also Crayons.

Chalk Lines—See Lines.

Checks, Door—

Bardsley's 40¢
 Columbia 50¢
 Eclipse 60¢

Chisels—

Socket Framing and Firmer
 Standard List 70¢
 Buck Bros. 30¢
 Charles Buck 30¢
 Swan's 75¢
 L. & J. White 75¢

Tanged—

Tanged Firmers 40¢
 Buck Bros. 30¢
 Charles Buck 30¢
 L. & J. White, Tanged 25¢

Cold—

Cold Chisels, good quality, lb. 11¢
 Cold Chisels, fair quality, lb. 12¢
 Cold Chisels, ordinary, lb. 8¢

Chucks—

Beach Pat., each \$8.00 20¢
 Skinner Patent Chucks:
 Combination Lathe Chucks 40¢
 Drill Chucks, Patent and Standard 30¢
 Drill Chucks, New Model 25¢
 Independent Lathe Chucks 40¢
 Improved Planer Chucks 30¢
 Universal Lathe Chucks 35¢
 Face Plate Jaws 35¢
 Union Mfg. Co.:
 Combination 40¢
 Gear Drill 30¢
 Geared Scroll 30¢
 Independent 30¢
 Union Drill 30¢
 Universal 40¢
 Face Plate Jaws 35¢

Clamps—

Adjustable, Hammers' 20¢
 Adjustable, Stearns' 30¢
 Cabinet, Sargent's 45¢
 Carriage Makers', P. S. & W. Co. 40¢
 Carriage Makers', Sargent's 50¢
 Beaver, Parali 35¢
 Lineman's, Ulica Drop Forge & Tool Co. 40¢
 Saw Clamps, see Vises, Saw Filers'.

Cleaners, Walk—

Star Socket, All Steel \$4.00 net
 Star Shank, All Steel \$3.75 net

Cleavers, Butchers—

Post Bros. 30¢
 New Haven Edge Tool Co.'s 40¢
 Nichols Bros. Flat hdl., 30¢; Rd. hdl., 40¢
 Fayette R. Plumb 25¢
 P. S. & W. 35¢

L. & J. White 25¢
Clippers—
 Chicago Flexible Shaft Company:
 Handy Toilet \$7.20
 Mascotte Toilet \$8.40
 Monitor Toilet \$9.00
 Stewart's Patent \$10.00

Clips, Axle—

Eagle and Superior ¼ and 5-16 inch 65¢
 Norway, ¼ and 5-16 inch 65¢

Cloth and Netting, Wire—

See Wire, &c.

Cocks, Brass—

Hardware List (Globe, Kerosene, Lever Bibbs, Racking, &c.) 60¢
 Coffee Mills—See Mills, Coffee.

Collars Dog—

Brass, Pope & Stevens' list 40¢
 Embossed, Gilt, Pope & Stevens' list 40¢
 Leather, Pope & Stevens' list 40¢

Compasses, Dividers, &c.—

Ordinary Goods 70¢
 Bemis & Call Hdw. & Tool Co.:
 Dividers 65¢
 Callipers, Call's Patent Inside 55¢
 Callipers, Double 65¢
 Callipers, Inside or Outside 65¢
 Callipers, Wing 60¢
 Compasses 30¢
 J. Stevens A. & T. Co. 25¢

Coolers, Water—

S. S. & Co.: 2-gal., \$14.00; 3-gal., \$16.00; 4-gal., \$18.50; 6-gal., \$23.00.

Coopers' Tools—

See Tools, Coopers'.

Cord— Sash—

Braided, Drab lb. 21¢
 Braided, White, Common, lb. 15¢
 Cable Laid Italian, lb. A. 18¢; B. 16¢
 Common India, lb. 8¢
 Cotton Sash Cord, Twisted, lb. 10¢
 Patent Russia lb. 12¢
 Cable Laid Russia lb. 13¢
 India Hemp, Braided, lb. 15¢
 India Hemp lb. 14¢
 Patent India lb. 10¢
 Pearl Braided, cotton lb. 10¢
 Massachusetts, White lb. 24¢
 Massachusetts, D. ab. lb. 24¢
 Eddy-tone Braided Cotton lb. 18¢
 Harmony Cable Laid Italian lb. 18¢
 Ossawa Mills:
 Crown, Solid Braided White lb. 18¢
 Braided, Giant, White lb. 17¢
 Peerless:
 Cable Laid Italian lb. 16¢
 Cable Laid Russian lb. 14¢
 Cable Laid India lb. 12¢
 Braided India lb. 18¢
 Phoenix, White lb. 17¢
 Sanson:
 Braided, Drab Cotton lb. 31¢
 Braided, Italian Hemp lb. 31¢
 Braided, Linen lb. 44¢
 Braided, White Cotton, Spot lb. 27¢
 Silver Lake:
 A quality, Drab, 40¢ 15¢
 A quality, White, 35¢ 15¢
 B quality, Drab, 35¢ 15¢
 B quality, White, 30¢ 15¢
 Italian Hemp, 40¢ 15¢
 Linen, 57¢ 15¢

Wire, Picture—

Braided or Twisted 70¢

Corn Knives and Cutters—

See Knives, Corn.

Crackers, Nut—

Little Giant \$24.00
 Turner & Seymour Mfg. Co. 50¢

Cradles—

Grain 50¢

Crayons—

White Round Crayons, gross 50¢
 Cases, 100 gro., \$4.50 @ \$5.00, at factory.

Metal Workers' Crayons, gr. \$2.50

Soapstone Pencils, round, flat or square \$1.50
 Rolling Mill Crayons \$2.50
 Railroad Crayons (composition) \$2.50

See also Chalk.

Creamery Pails—See Pails.

Creamery.

Crooks, Shepherds—

Fort Madison, Heavy \$7.00
 Fort Madison, Light \$6.50

Crow Bars—See Bars, Crow.

Cultivators—

Victor Garden \$10.00

Cutters—

Glass—
 Smith & Heminway Co. 40¢

Meat—

American 30¢
 Nos. 1 2 3 4 5 6
 Each \$5 \$7 \$10 \$25 \$50 \$60
 Connecticut:
 No. 1 1 8 10 12
 Each \$1.75 2.25 3.00 3.00 3.50
 Enterprise 25¢
 Nos. 5 10 12 22 32
 Each \$3 \$3 \$2.50 \$4 \$6
 Dixon's 30¢
 Nos. 1 2 3 4 5 6
 Each \$14.00 \$17.00 \$19.00 \$30.00
 Hale's 10¢
 Nos. 1 2 3 4 5 6
 Each \$27.00 \$38.00 \$45.00
 Home No. 1 60¢
 Little Giant 35¢
 Nos. 305 310 312 340 322
 \$35.00 \$48.00 \$44.00 \$71.00 \$68.00

Miles' Challenge, \$ doz. 45¢
 Nos. 1 2 3
 \$22.00 \$30.00 \$40.00
 New Triumph No. 605, \$ doz. \$24.00
 38¢
 Woodruff's, \$ doz. 45¢
 Nos. 100 150
 \$15.00 \$18.00
 Chadborn's Smoked Beef Cutter, \$ doz. \$60.00
 Enterprise Beef Shavers 25¢

Slaw and Kraut—

Henry Diss'on & Son:
 Slaw, Q. R. Grater, &c. 40¢
 Kraut Cutters 24 x 7, 26 x 8, 30 x 9, 55¢
 Kraut Cutters 36 x 12, 40 x 12 40¢
 Tucker & Dorsey Mfg. Co.:
 Kraut Cutters 50¢
 Slaw Cutters, 1 Knife, \$ gr. 15¢
 Slaw Cutters, 2 Knife, \$ gr. 27¢

Tobacco—

All Iron, Cheap doz. \$4.25 @ \$4.50
 Enterprise 25¢
 National, \$ doz. \$21.00 40¢
 Sargent's, \$ doz. \$24.00 60¢

Washer—

Appleton's, \$ doz. \$16.00 60¢
 Bonney's \$ doz. \$4.75

Diggers, Post Hole, &c.—

Iwan's Improved Post Hole Auger 40¢
 Iwan's Perfection Post Hole Digger 40¢
 Never-Break Post Hole Diggers, \$ doz. \$24.00 60¢
 Samson, \$ doz. \$34.00 25¢

Dividers—See Compasses.

Dog Collars—See Collars, Dog.

Door Checks—

See Checks, Door.

Door Springs—

See Springs, Door.

Drawers, Money—

Tucker's Pat. Alarm Till No. 1, \$ doz. \$18; No. 2, \$12; No. 3, \$11; No. 4, \$12.

Drawing Knives—

See Knives, Drawing.

Drills and Drill Stocks—

Common Blacksmiths' Drill, each \$1.75 @ \$2.00

Blacksmiths' Self-feeding, each \$3.75 @ \$4.00

Bench Drills, Stearns' 50¢
 Breast, Millers Falls, each \$3.00, 15¢
 Breast, P. S. & W. 30¢
 Goodell Automatic Drills, 40¢
 Ratchet, Curtis & Curtis 25¢
 Ratchet, Parker's 40¢
 Ratchet, Weston's 20¢
 Ratchet, Whitney's, P. S. & W. 40¢
 Whitney's Hand Drill, No. 1, \$10.00, Adjustable, No. 10, \$12.00 33¢

Twist Drills—

Standard List 65¢

Drill Bits or Bit Stock

Drills—See Augers and Bits.

Drill Chucks—See Chucks.

Dripping Pans—

See Pans, Dripping.

Drivers, Screw—

Balsey's Screw Holder and Driver, \$ doz. 2½-in. \$6; 4-in., \$7.50 6-in., \$9.40
 Buck Bros' 30¢
 Buck Bros' Screw Driver Bits 27¢
 Champion 40¢
 D. Eaton's Flat Blade, Elec. ric, &c. 70¢
 Douglas Mfg. Co. 20¢
 Frazer's Hol. Hdl. Sets, No. 2, \$12.00 50¢
 Gay & Parsons' Ratchet 35¢
 Goodell's Automatic 50¢
 Mayhew's Black Handle 50¢
 Mayhew's Monarch 45¢
 New England Specialty Co. 50¢
 Sargent & Co.'s 20¢
 No. 1, 50, 55 and 60.50 @ 10¢ 50¢ 10¢ 10¢
 Nos. 20 and 40 60¢
 Screw Driver Bits 50¢
 Stanley's R. & L. Co.'s:
 No. 64, Varnished Handles 70¢
 No. 86 75¢

Egg Beaters—See Beaters, Egg.

Emery—Nos. 4 to 54 to Flour, CF:

46 gro. 1.80 gro. F.F.F.
 Kegs lb. 4¢ 5 c 5 c 5 c
 ½ Kegs lb. 4¢ 5 c 5 c 5 c
 ¼ Kegs lb. 5 c 5 c 5 c 5 c
 10-lb. cans, 10 in case 6 c 6 c 6 c 6 c
 10-lb. cans, less than 10 10 c 10 c 10 c 8 c

Enameled and Tinned Ware—See Ware, Hollow.

Escutcheon Pins—

See Pins, Escutcheon.

Extractors, Lemon Juice—

See Squeezers, Lemon.

Fasteners, Blind—

Zimmerman's 50¢

Faucets—

Cork Lined 70¢
 Metallic Key, Leather Lined 70¢
 Red Cedar 50¢

B. & L. B. Co.:—

West's Lock, Open and Shut Key 50¢
 John Sommer's Peerless Tin Key 40¢
 John Sommer's Boss Tin Key 50¢
 John Sommer's Duplex Metal Key 40¢
 John Sommer's Diamond Lock 40¢
 John Sommer's I. X. L. Cork Lined 50¢
 John Sommer's Reliable Cork Lined 50¢

John Sommer's Common Cork Lined, 70¢

John Sommer's Chicago Cork Lined 60¢
 John Sommer's O. K. Cork Lined 60¢
 John Sommer's Perfection Cedar 60¢
 Star, Metal Plug new list 40¢
 Lockport, Metal Plug, reduced list 60¢

Self Measuring:

Enterprise, \$ doz. \$36.00 40¢
 Lane's, \$ doz. \$36.00 80¢
 National Measuring, \$ doz. \$66.00 40¢

Felloe Plates—

See Plates, Felloe.

Files—Domestic—

List revised Nov. 1, 1899.

Best Brands 70¢
 Good Brands 75¢
 Fair Brands 75¢
 Second Quality 80¢

Imported—

Stubs' Tapers, Stubs' list, July 1, '97 25¢

Fixtures, Grindstone—

Net Prices:
 Inch 15 17 19 21 23
 Per doz. \$3.50 \$5.50 \$7.50 \$9.50 \$11.50
 Stowell's Giant Grindstone Hanger 60¢
 Stowell's Grindstone Fixtures 50¢
 P. S. & W. Co. 50¢
 Reading Hardware Co. 30¢
 Sargent's Patent 60¢

Fluting Machines—

See Machines, Fluting.

Fodder Squeezers—

See Squeezers, Fodder.

Forks—

Aug. 1, 1899, list.

Hay, 2 tine 60¢
 Hay, 3 tine 65¢
 Manure, 4 tine 70¢
 Manure, 5 and 6 tine 70¢
 Spading 70¢
 Iowa Dig-Ey Potato 60¢
 Victor, Hay 70¢
 Victor, Manure 70¢
 Victor, Header 70¢
 Champion, Hay 60¢
 Champion, Manure 70¢
 Columbia, Hay 60¢
 Columbia, Manure 70¢
 Columbia, Spading 70¢
 Hawkeye Wood Barley 4 tine \$ doz. \$5.00; 6 tine, \$6.00.
 Plated.—See Spoons.

Frames—

Saw—

Red, Polished and Varnished, \$ doz. \$1.05 @ \$1.10

White doz. 75¢

Screens, Window and Door—

Bonanza Window Screens 50¢
 Phillips' Window Screen Frames 60¢
 Porter's Extension Window Screens 50¢
 Wash Spring Adj. Screen 50¢
 Warner's Screen Corner Irons 50¢

Freezers, Ice Cream—

Qts. 2 3 4 5 6 8 10
 Best, \$1.10 1.60 1.85 2.80 3.00 3.50
 Good, \$1.15 1.85 1.70 2.05 2.65 3.50
 Fair, \$1.00 1.10 1.30 1.75 2.30 3.50

Fruit and Jelly Presses—

See Presses, Fruit and Jelly.

Fry Pans—See Pans, Fry.

Fuse—

Per 1000 Feet.

Hemp Fuse \$2.60
 Cotton Fuse 2.90
 Single Taped Fuse 3.50
 Double Taped Fuse 4.70
 Triple Taped Fuse 6.70

Gates, Molasses and Oil—

Stebbin's 80¢

Gauges—

Marking, Mortise, &c. 60¢

Barrett's Comb. Roller Gauge 25¢
 Stanley R. & L. Co.'s Butt & Rabbit Gauge 25¢
 Wire, Brown & Sharpe's 25¢
 Wire, Morse's 25¢
 Wire, P. S. & W. Co. 10¢

Cimlets—

Nail, Metal, Assorted, gro. \$1.50@1.75
Spike, Metal, Assorted, gro. \$3.00@3.50
Nail, Wood Handled, Assorted,
gro. \$4.00@4.50
Spike, Wood Handled, Assorted,
gro. \$5.00@5.50

Glass, American Window

List Jan. 1, 1898.

Small lots from store:
Eastern.....80¢@10¢
Western.....80¢@15¢
From Factory, with Frt. Allowance:
Carloads.....80¢@15¢
1000 boxes or more, Gulf Ports.....85¢@10¢
3000 boxes or more.....80¢@20¢
6000 boxes or more.....85¢

Glue—Liquid, Fish—

List A, Bottles or Cans, with Brush.....37½¢@50¢
List B, Cans (½ pts., pts., qts.).....33½¢@45¢
List C, Cans (½ gal., gal.).....25¢@45¢

Glue Pots—See Pots, Glue.**Grease, Axle—**

Common Grade.....gro. \$5.00@6.00
Allerton's Axle:
1 lb. Tin, ½ gr.....\$9.00
3 lb. Tin, ½ doz., \$2.00; 5 lb., \$3.00;
10 lb., \$6.00.
25 lb. wood pails.....\$12.00
Dixon's Everlasting, 10-lb. pails, ea. 85¢
Dixon's Everlasting, in bxs., ½ doz. 1 lb.
\$1.20; 2 lb. \$2.00

Grindstone Fixtures—

See Fixtures, Grindstone.

Gun Powder—See Powder.**Hack Saws—See Saws.****Hafts, Awl—**

Peg Patent, Leather Top.....\$1.20@1.25
Peg Patent, Plain Top.....\$3.50@3.75
Seicing, Brass Ferrule.....\$1.50@1.60
Saddlers', Brass Ferrule.....\$1.55@1.65
Peg, Common.....\$1.25@1.35
Brad. Common.....\$1.50@1.75

Halters and Ties—

Covert Mfg. Co., Web.....45¢@2¢
Covert Mfg. Co., Jute Rope.....45¢@2¢
Covert Mfg. Co., Sisal Rope.....30¢@2¢
Covert's Saddlery Works, 96 list, Wab.....80¢@10¢
Covert's Saddlery Works, Leather.....60¢@10¢
Covert's Saddlery Works, Jute.....60¢@10¢
Covert's Saddlery Works, Sisal.....60¢@10¢
Covert's Saddlery Works, Manila.....60¢@10¢
Covert's Saddlery Works, Cotton.....70¢@10¢

Hammers—**Handled Hammers—**

Heiler's Machinists'.....40¢@40¢
Magnetic Tack, Nos. 1, 2, 3, \$1.25, \$1.50,
\$1.75.
Felt, Stow & Wilcox.....40¢@40¢
Fayette R. Plumb:
Artisans' Choice, A. E. Nail.....38½¢@55¢
Engineers' and B. S. Hand.....50¢@10¢
Machinists' Hammers.....50¢@10¢
A. E. & A. R. Bell Face Nail.....38½¢@55¢
Riveting and Fitters'.....38½¢@55¢
Sargent's C. S. New List.....45¢@45¢@10¢

Heavy Hammers and**Sledges—**

5 lb. and under.....lb. 50¢
5 to 10 lb.....lb. 50¢ 75¢@75¢
Over 10 lb.....lb. 50¢ 10¢@5¢
Note.—Lower net prices sometimes
made by jobbers.
Wilkinson's Smiths'.....94¢@10¢ lb.

Handcuffs and Leg Irons**See Police Goods.****Handles—****Agricultural Tool Handles—**

Hoe, Rake, Fork, &c.....50¢@10¢@50¢
Shovel, &c., Wood D Handle.....50¢@50¢

Cross-Cut Saw Handles—

Atkins'.....40¢
Champion.....45¢@45¢@10¢
Dixon's.....50¢

Mechanics' Tool Handles—

Auger, assorted.....gro. \$2.25@3.50
Auger, large.....gro. \$2.75@3.00
Brad Awl.....gro. \$1.40@1.50

Chisel Handles:

Apple Firmer, gro. ass'd. \$2.25@
\$3.50; large, \$3.75@3.00.
Hickory Firmer, gro. ass'd. \$2.25
@3.50; large, \$3.50@3.75.
Socket, gro. ass'd. Firmer, \$1.50@
\$1.80; Framing, \$2.50@2.75.
File, assorted.....gro. \$1.00@1.15
Hammer, Hatchet, Axe, &c.....50¢@10¢
Hand Saw, Varnished, doz. 75¢@80¢
Not Varnished.....55¢@80¢
Plane Handles:
Jack, doz. \$2.25; Jack Bolted.....55¢@60¢
Fore, doz. 35¢@35¢; Fore, Bolted.....70¢@75¢

Hangers—

Barn Door, New Pattern, Round
Groove, Regular:
Inch.....3 4 5 6 8
Dox.....\$1.10 1.5 1.80 2.10 2.75
Barn Door, New England Pattern,
Check Back, Round Groove, Reg-
ular:
Inch.....3 4 5 6
Dox.....\$1.50 2.00 2.60 3.25

Chicago Spring Butt Co.:

Friction.....30¢@30¢@10¢
Oscillating.....30¢@30¢@10¢
Big Twin.....30¢@30¢@10¢
Chisholm & Moore Mfg. Co.:
Advance.....55¢
Cleveland.....60¢
Baggage Car Door.....50¢
Elevator.....40¢
Railroad.....55¢
Car Ball Bearing, ½ doz. pair \$8.50
No. 10 Roller Bearing, doz. pr. 5.50
No. 20 Roller Bearing, doz. pr. 4.50
Nickel.....50¢
J. G. O.....50¢@2¢@10¢
Lane Bros.:
Parlor, Standard.....40¢@5¢@2¢
Parlor, New Model.....40¢@3¢
Barn Door, Standard.....50¢@10¢
Covered.....50¢@10¢
Special.....80¢@5¢
Lawrence Bros.:
Crown.....60¢
New York.....60¢
Sterling.....60¢
McKinney Mfg. Co.:
No. 2, Standard, 18.....60¢@10¢
No. Special, 13.....60¢@10¢
Stowell Mfg. and Foundry Co.:
Badger.....60¢
Baggage Car Door.....33½¢
Olimax Anti-Friction.....50¢
Elevator.....40¢
Interstate.....50¢@10¢
Magic.....50¢
Matchless.....50¢@10¢
Nansen.....50¢@10¢
Parlor Door.....50¢@10¢
Railroad.....50¢@10¢
Street Car Door.....50¢@10¢
Steel, Nos. 300, 400, 500.....40¢@15¢
Will West.....50¢@10¢
Zenith for Wood Track.....50¢@10¢
Taylor & Boggs Foundry Co.:
Kiddler's.....50¢@50¢@10¢
Van Wagoner & Williams Hdw. Co.:
American Trackless.....33½¢@10¢
Wilcox Mfg. Co.:
Bike Roller Bearing.....60¢@10¢
C. J. Roller Bearing.....60¢@10¢
Cycle Ball Bearing.....60¢@10¢
L. T. Roller Bearing.....60¢@10¢
New Era.....50¢@10¢
New Richards.....60¢
O. K. Roller Bearing.....60¢@10¢
Prindle Improved.....60¢@10¢
Richards' Improved.....60¢@10¢
Richards' Single Track.....50¢@10¢
Wilcox Dwarf Roller Bearing.....40¢@10¢
Wilcox-Ives.....60¢@10¢
Wilcox Tandem Roller Bearing.....60¢@10¢
Wilcox Trolley Ball Bearing.....40¢
Wilcox Trolley Roller Bearing.....50¢
Wilcox Trolley Roller Bearing.....40¢@10¢
Fire.....40¢@10¢

Harness Menders—See

Menders.

Harness Snaps—See Snaps.**Hasps—**

McKinney's Perfect Hasp, ½ doz. \$1.10
40¢@10¢
Wrought Hasps, Staples, &c.—See
Wrought Goods.

Hatchets—

Best Brands.....50¢@10¢@50¢
Cheaper Brands.....50¢@10¢@50¢
Note.—Net prices after made.

Hay and Straw Knives—

See Knives.

Hinges—**Blind Hinges—**

Lull & Porter Old Style Shutter:
No.....1 1½ 2 3 4
Dox. pair.....\$0.65 .80 .95 .43
1883 Old Pattern Blind Hinge:
No.....1 1½ 2 3 4
Dox. pair.....\$0.75 1.35 2.60
Parker.....70¢@75¢
North's Automatic Blind Fixture, No.
2, for Wood, \$9.00; No. 3, for Brick,
\$11.50.
Reading's Gravity.....75¢@10¢
Sargent's, Nos. 1, 3, 5.....60¢@10¢
Sargent's, Nos. 11 & 13.....7 10¢@70¢@10¢@10¢

Wrightsville Hdw. Co.:

Acme, Lull & Porter.....75¢
Buffalo Gravity Locking, Nos. 1, 3
and 5.....75¢
Champion Gravity Locking, No. 75, 80¢
1888, Old Pat'n, Nos. 1, 3 & 5.....75¢@10¢
Tip Pattern, Nos. 1, 3 and 5.....75¢@10¢
Double Locking, Nos. 20 and 25, 70¢@10¢
Empire, Nos. 101 and 103.....70¢
Niagara Gravity Locking, Nos. 1, 3
and 5.....75¢@15¢
Noisless, Nos. 50, 60, 65 and 55, 75¢@5¢
O. S. Lull & Porter.....75¢@5¢
Pioneer, Nos. 060, 45 and 54.....75¢@5¢
Steamboat Gravity Locking, No. 10.....80¢
Stanley's Steel Gravity Blind Hinges,
½ doz. sets \$1.20.....80¢@10¢

Gate Hinges—

Clark's or Shepard's—Dox. sets:
No.....1 2 3
Hinges with Latches.....1.90 2.50 4.35
Hinges only.....1.90 1.55 3.90
Latches only.....0.70 0.70 1.90
New England:
With Latch.....doz. \$1.75@1.80
Without Latch.....doz. \$1.50@1.45
Reversible Self-Closing:
With Latch.....doz. \$1.65@1.75
Without Latch.....doz. \$1.50@1.35
Western:
With Latch.....doz. \$1.60@1.65
Without Latch.....doz. \$1.00@1.05

Spring Hinges—

Holdback, Cast Iron.....gro. \$7.00@7.50
Non-Holdback, Cast Iron.....gro. \$5.00@5.50

J. Bardsley:

Bardsley's Patent Checking.....10¢
Bommer Bros.:
Chicago Spring Butt Co.:
Chicago.....25¢
Garden City Engine House.....25¢
Keene's Saloon Door.....25¢
Coleman Hdw. Co.:
Champion Holdback.....½ gr. \$9.00
J. G. O.....½ gr. \$9.00
Nickel.....½ gr. \$9.00
Lawson Mfg. Co.:
March 18.....25¢
Matchless Pivot.....40¢
Payson Mfg. Co.:
Oblique, Dbl. Acting.....50¢@50¢@5¢
Stover Mfg. Co.:
Ideal, No. 16, Detachable, ½ gr.....\$2.50
Ideal, No. 4.....½ gr. \$3.00
New Idea No. 1.....½ gr. \$3.00
New Idea, Double Acting.....45¢
Van Wagoner & Williams Hdw. Co.:
Acme.....30¢@5¢
American.....30¢
Columbia, No. 14.....½ gr. \$8.00
Columbia, No. 18.....½ gr. \$34.00
Crown.....30¢
Gem.....30¢
Knoxall.....½ gr. \$9.00
Oxford.....30¢

Wrought Iron Hinges—

Strap and T Hinges, &c., list Mar.
15, 1898:
Light Strap Hinges.....66½¢
Heavy Strap Hinges.....70¢
Light T Hinges.....50¢@10¢
Heavy T Hinges.....60¢@10¢
Extra Heavy T Hinges.....66½¢
Hinge Hasps.....45¢
Stanley's Corrugated Heavy
Strap.....70¢
Stanley's Cor. H. Heavy T.....66½¢
Note.—Change in base discounts.

Roller Plate.....70¢@70¢@5¢

Screw Hook 6 to 12 in.....lb. 3¼¢@3¼¢
and Strap 22 to 36 in.....lb. 3 3¼¢@3¼¢
Screw Hook and Eye:
¾ in.....lb. 5¼¢@5¼¢
1 in.....lb. 6¼¢@6¼¢
1½ in.....lb. 8¼¢@8¼¢
Hoes— Eye—
Scovill and Oval Pattern.....60¢@50¢@10¢@5¢
Grub. list Feb. 23, 1899.....65¢@55¢@10¢
D. & H. Scovill.....35¢@35¢@5¢

Handled—

Aug. 1, 1899, List:
Field and Garden.....75¢@3¢
Ladies', Boys', Toy and Onion.....70¢@10¢@10¢
Street and Mortar.....75¢@7¼¢@2¢
Cotton.....70¢@10¢@10¢@5¢
Planters'.....70¢@30¢
Weeding.....75¢@30¢
Note.—Manufacturers and jobbers use
diversity of lists, and often sell at net
prices.
Ft. Madison Crucible Garden Hoe.....75¢@3¢
Ft. Madison Crescent Cultivator Hoe,
per doz.....75¢@10¢@3¢
Ft. Madison Mattock Hoe, ½ doz.....\$4.50
Ft. Madison Spading Hoe, ½ doz.....\$4.80
Ft. Madison Dixie Tobacco Hoe.....75¢@30¢
Kretzinger's Cut Easy, per doz.....75¢@2¢
Warren Hoe.....60¢

Hog Rings and Rings—

See Rings and Ringers.

Hoisting Apparatus—

See Machines, Hoisting.

Hollow Ware—

See Ware, Hollow.

Holders— Bit—

Angular, ½ doz. \$24.00.....45¢@10¢
File and Tool—
Nicholson File Holders and File Han-
dles.....33½¢@4¢

Hooks— Cast Iron—

Bird Cage, Reading.....50¢@10¢@60¢
Bird Cage, Sargent's List.....35¢@10¢
Clothes Line, Sargent's List.....40¢@40¢@10¢
Clothes Line, Stowell's.....70¢
Clothes Line, Reading List.....85¢@10¢@65¢@10¢@10¢
Coat and Hat, Stowell's.....70¢
Coat and Hat, Reading.....70¢@75¢
Coat and Hat, Sargent's List.....35¢@10¢
Coat and Hat, Wrightsville.....85¢@10¢
Harness, Reading List.....70¢@10¢@75¢

Wire—

Belt.....80¢@10¢@80¢@20¢
Atlas, Coat and Hat.....50¢@50¢@10¢
Wire Coat and Hat.....60¢@60¢@5¢
Acme.....60¢@60¢@5¢
Gem.....70¢@70¢@5¢
Bright Wire Goods—See Wire.

Wrought Iron—

Box, or Case, Octagon Steel.....doz. \$2.10@2.20
Cotton.....doz. \$1.05@1.15
Picture, T. & S. Mfg. Co.....75¢
Tassel, T. & S. Mfg. Co.....50¢@10¢
Wrought Staples, Hooks, &c.—
See Wrought Goods.

Miscellaneous—

Bush, Light, doz. \$5.50; Medium,
\$6.00; Heavy, \$6.50
Grass.....Nos. 1 2 3 4
Beat.....\$1.00 1.75 2.00
Common.....\$1.50 1.50 1.50 1.75
Potato and Manure.....75¢@15¢
Whiffletree.....lb. 4¼¢
Hooks and Eyes:
Brass.....70¢@70¢@10¢
Malleable Iron.....70¢@10¢@75¢

Covert Saddlery Works' Self Locking

Gate and Door Hook.....60¢@10¢
Crown Picture.....50¢@10¢
Bench Hooks—See Bench Stops.
Corn Hooks—See Knives, Corn.

Horse Nails—See Nails, Horse**Horseshoes—**

See Shoes, Horse.

Hose, Rubber—

Garden Hose, ¾-inch:
Competition.....ft. 6¼¢@5¼¢
2-ply Standard.....ft. 5¼¢@6 0
3-ply Standard.....ft. 6¼¢@6¼¢
2-ply extra.....ft. 6¼¢@7¼¢
4-ply extra.....ft. 7¼¢@8¼¢
High Grade.....ft. 9 @11 c
Cotton Garden, ¾-in., coupled:
Low Grade.....ft. 5¼¢@6¢
Fair quality.....ft. 7 c
Good quality.....ft. 8 @8 c

Irons— Sad—

From 1 to 10.....lb. 3¼¢@3¼¢
B. B. Sad Irons.....lb. 3¼¢@4¢
Chinese Laundry.....lb. 5¢@5¼¢
Chinese Sad.....lb. 5¼¢@4¢
Mrs. Potts', per set:
Nos. 60 55 60 65
85¢@1.00 78¢@93¢ 95¢@1.10 89¢@1.05
New England Pressing.....lb. 3¼¢@3¼¢

Soldering—

Soldering Coppers.....lb. 28¢@50¢
Covert Mfg. Co.....20¢@2¢

Pinking—

Pinking Irons.....doz. 50¢@60¢

Jack Screws—See Screws.**Jacks, Wagon—**

Covert Mfg. Co., Steel.....45¢@2¢
Daly.....70¢
Ill. I. & B. Co. Common.....70¢@75¢
Lockport.....40¢@40¢@10¢
Victor.....60¢
Lane's Steel.....33½¢@3¢

Kettles—

Brass, Spun, Plain, list Jan. 10, '99
15¢@30¢
Enameled and Tea—See Ware, Hollow.

Knife Sharpeners—

See Sharpeners, Knife.

Knives—**Butcher, Shoe, &c.—**

Dick's Butcher Knives.....40¢
Foster Bros' Butcher, &c.....30¢
Nichols' Butcher Knives.....50¢
Hay and Straw—See Hay Knives.

Corn—

Ft. Madison Cut-Easy, ½ doz.....\$3.25

Drawing—

Standard List.....75¢@5¢@10¢
Adjustable Handle.....25¢@3¼¢
Bradley's.....35¢
Swan's.....75¢@75¢@2¼¢
Watrous.....80¢@10¢@40¢
L. & L. J. White.....20¢@5¢@25¢
Cauley's Folding.....50¢@50¢@5¢

Hay and Straw—

Blizzard.....\$5.75@6.00
Iwan's Sickle Edge.....½ doz. \$1.50
Lightning.....75¢@10¢

Mining—

Buffalo.....½ doz. \$15.00
Smith's, ½ doz., Single, \$3; Double, \$3
45¢@50¢

Miscellaneous—

Farrier's.....doz. \$2.00@3 25
Wostenholme's.....½ doz. \$3.00@3 25

Knobs—

Base, ¾-inch, Birch, Rubber tip,
gro.....\$1.40@1.45
Carriage, Jap. all sizes.....gro. 56¢@10¢
Door, Mineral.....doz. 78¢@90¢
Door, For Jap d.....doz. 85¢@90¢
Door, For Nickel.....doz. \$3 10¢@2.20
Bardley's Wood Door, Shutter, &c.....10¢
Picture, Sargent's.....70¢@10¢
Snow's Victor.....50¢@10¢

Ladles— Melting—

L. & G. Mfg. Co.....60¢
P. S. & W.....40¢@40¢@10¢
Reading.....50¢@10¢
Sargent's.....40¢@40¢@10¢

Lanterns— Tubular—

Regular Tubular.....doz. \$4.00@4.50
Side Lift Tubular.....doz. \$4.25@4.75
Square Lift Tubular.....doz. \$4.25@4.75
Other Styles.....doz. \$4.25@4.75
Meyrose Side Lift Tubular, doz. 85¢@10¢
45¢@10¢

Bull's Eye Police—

¾-inch flash light.....doz. \$3.50@3.75
¾-inch flash light.....doz. \$4.00@4.25
¾-inch regular.....doz. \$3.25@3.50
¾-inch regular.....doz. \$3.50@3.75

Latches, Thumb—

Roggin's Latches.....doz. 35¢@45¢

Lawn Mowers—

See Mowers, Lawn.

Leaders, Cattle—

Small.....doz. 45¢; large, 55¢
Covert Mfg. Co.....45¢@25¢

Lemon Squeezers—

See Squeezers, Lemon.

Lifters, Transom—

Dickson:

3 x 4 ft. x 1/2	100	\$11.00
Other sizes Iron	70	& 10%
Other sizes, Brass and Bronze	70	& 10%
Excelsior	60	& 80 & 10%
Payson's:		
Solid Grip Nos. 643 and 644	100	\$11.00
Bronzed Iron	70	& 10%

Lines—

Wire Clothes, Nos. 13	19	20
100 feet	\$2.50	\$2.25
75 feet	\$1.50	
Ossawa Mills:		
Crown Solid Braided Chalk	23	45
Mason's, No. 0 to No. 5	38	45
Silver Lake Braided Chalk, No. 0	36	00
No. 1, \$0.50; No. 2, \$7.00; No. 3, \$7.50		
per ft.		30%

Locks, &c.— Cabinet—

Cabinet Locks.....55% @ 33% & 7%

Door Locks, Latches, &c.—

[Net prices are very often made on these goods.]

Reading Hardware Co.	40%
R. & E. Mfg. Co.	45% & 10%
Sargent & Co.	40% & 40% & 10%
Slaymaker-Barry Co.	30% & 35%
Snow's Victor	50% & 10%

Elevator—

Stowell's.....65%

Padlocks—

Wrought Iron, list Dec. 3, '97.....70 @ 70 & 10%

Dog Collar, S. B. Co.....40%

R. & E. Mfg. Co. Wrt. Steel and Brass.....40%

S. B. & Co.....40%

Sash, &c.—

Fitch's Bronze and Brass.....66%

Fitch's Iron.....70%

Ives' Patent.....62 1/2 @ 10 @ 66 1/2 & 10%

Payson's Perfect.....70%

Payson's Signal (new list).....75%

Reading.....60 & 10 @ 10 @ 70%

Machines—**Boring—**

Without Augers.

Upright. Angular.

Douglas.....\$2.50 \$3.00

Jennings.....2.50 3.00

Miller's Falls.....4.75

Snell's, Rice's Pat. 2.50 2.75

Hoisting—

Moore's Anti-Friction Differential Pulley Block.....30%

Moore's Hand Hoist, with Lock Brake.....20%

Washing—

Wayne American.....per doz. \$27.00

Western Star, No. 2, 28.00

Western Star, No. 3, 30.00

St. Louis, No. 41, per doz. 60.00

Mallets—

Hickory.....45 & 50 @ 55 & 55

Lignumvite.....45 & 50 @ 55 & 55

Tinnors', Hickory and Applewood, doz.....60 @ 55 & 60

Fiber Head Stearns'.....80 @ 55 & 80

Mattocks—

List Feb. 23, 1899.....65 @ 65 & 10%

Meat Cutters—

See Cutters, Meat.

Milk Cans—See Cans, Milk.**Mills— Coffee—**

Box and Side, list Jan. 1, '98.....60 & 5 @ 60 & 10 & 5%

Net prices are often made on some goods which are lower than above discounts.

Enterprise Mfg. Co., list Jan. 17, '99.....30%

National, list Jan. 1, '94.....30%

Parker's Columbia and Victor.....60 & 10%

Parker's Upright.....30 & 10 @ 40%

Swift, Lane Bros.....30%

Mining Knives—

See Knives, Mining.

Molasses Gates—

See Gates, Molasses.

Money Drawers—

See Drawers, Money.

Mowers, Lawn—

Net prices are generally quoted.

10 12 14 16-inch

Cheap.....\$1.00 @ \$1.75

Good.....3.00 3.25 3.50 3.75

High Grade 4.00 4.25 4.50 4.75

Pennsylvania and Continental 60 & 10 & 5%

Quaker City.....70 & 5%

Great American.....70 & 5%

Philadelphia:

Styles M., S., C., K., T.	70 & 10%
Style A, all Steel	60 & 10%
Style E, Low Wheel	60 & 10%
Style E, High Wheel	70 & 10%
Drexel and Gold Coin, low list	60%

Nails—Cut and Wire. See Trade Report.
Wire Nails and Brads, Papered.
List July 20, 1899.....80 @ 80 & 10%
Hungarian, Finishing, Upholsterers', &c. See Tacks.**Horse—**

Nos. 6 7 8 9 10					
A. C.	25	23	22	21	21
Capewell	19	18	17	16	16
C. B. K.	25	23	22	21	21
Champlain	23	22	21	20	20
Maud S.	25	23	22	21	21
Neponset	23	21	20	19	18
Putnam	23	21	20	19	18
Standard	23	21	20	19	18
Star	23	21	20	19	18
Vulcan	23	21	20	19	18

Picture—

1 1/2 x 2 1/2	3 1/2 in.
Brass Head	.90 .95 1.00 1.05 1.10 gro.
Por. Head	.85 .90 .95 1.10 1.15 gro.

Nippers, See Pliers and Nippers.**Nut Crackers—**

See Crackers, Nut.

Nuts—

List Feb. 1, '99.

Mfrs. or U. S. Standard. Off

Cold Punched.

Hexagon, plain.....4.10 @ 4.30

Square, plain.....4.10 @ 4.30

Square, C. T. & R.....3.90 @ 4.10

Hexagon, C. T. & R.....4.40 @ 4.60

Hot Pressed:

Mfrs., U. S. or Nar. Gauge Stan'd.

Square.....4.10 @ 4.30

Hexagon.....4.60 @ 4.80

Norm.—Tapped Nuts are now 2-10c.

higher than above.

Oakum—

Best or Government.....lb. 5 1/2 c

Navy.....lb. 4 1/2 c

U. S. Navy.....lb. 5 1/2 c

Plumbers' Spun Navy.....2 1/2 c

In carload lots 1/4 c lb. off f.o.b. New York.

Oil Tanks—See Tanks, Oil.**Oilers—**

Brass and Copper.....10 & 10 @ 50%

Tin or Steel.....60 & 10 @ 10 @ 70 & 5%

Zinc.....60 & 5 @ 65%

Malleable, Hammers' Improved, No. 1

\$3.00; No. 2 \$4; No. 3, \$4.40 per doz. 20%

Malleable, Hammers' Old Pattern

same list.....50 & 10%

Willmot & Hobbs Mfg. Co.....70 @ 70 & 10%

Openers, Can—

French.....doz. 25c

Iron Handle.....doz. 25c

Sprague, Iron Handle per doz. 85 @ 100

Sardine Scissors.....\$1.75 @ \$2.00

National, per doz. \$1.75 @ \$2.00

Stowell's.....per doz. 40 @ 45c

Packing—**Rubber—**

Standard, fair quality.....70 & 10 @ 75%

Inferior quality.....75 & 10 @ 80%

Extra.....60 & 5 @ 60 & 10 & 5%

Jenkins' Standard, 1/2 lb doz. 25 & 35 & 5%

Miscellaneous—

American Packing.....9 @ 10c lb.

Cotton Packing.....13 @ 11c lb.

Italian Packing.....10 1/4 @ 11 1/4c lb.

Jute.....5 @ 5 1/4c lb.

Russia Packing.....12 @ 13c lb.

Pails—

Creamery—

S. S. & Co., with gauges.. No 1 \$6.50;

No. 2, \$6.75 per doz.

Galvanized—

Inch.....10 12 14

Water, Standard.....\$23.00 \$26.00 \$29.00

Water, Regular.. 19.00 22.00 25.00

Water, Heavy.....22.00 25.00 29.00

Fire, Rd. Bottom, gro.....31.00 33.00 35.00

Well, gro.....27.00 29.00 31.00

Pans—**Dripping—**

Large Sizes.....lb. 4 1/2 c

Small Sizes.....lb. 6 1/2 c

Fry—

Standard List.....30 @ 80 & 10%

Roasting and Baking—

Regal, S. S. & Co., per doz. Nos. 5, \$4.50;	
10, \$5.00; 20, \$5.50; 30, \$6.00	
Simplex, per gro., No. 40, \$30.00; 50,	
\$34.50; 60, \$39.00; 140, \$33.00; 150,	
\$37.50; 160, \$43.00.	

Paper—

Building Paper—	Per roll
Rosin Sized Sheathing:	500 sq. ft.
Light wt., 20 sq. ft. to lb.	\$0.40 @ 0.45
Medium wt., 12 sq. ft. to lb.	\$0.60 @ 0.65
Heavy wt., extra quality	\$0.95 @ 1.05
Medium Grades Water Proof	\$0.80 @ 1.25
Sheathing	\$0.80 @ 1.25
Deafening Felt, 5, 6 and 1 1/2 sq. ft.	\$4.50 @ 50.00
to lb., ton.	\$1.35 @ 1.75
York Haven Waterproof Sheathing	\$1.35 @ 1.75

Tarred Paper.

1 ply (roll 300 sq. ft.) ton.	\$35.00 @ 40.00
2 ply, roll 100 sq. ft.	\$40.00 @ 45.00
3 ply, roll 100 sq. ft.	\$45.00 @ 50.00

Sand and Emery—

List April 19, 1888.....60 & 5 @ 50 & 10 & 5%

Parers—

Apple—	
Advance.....per doz. \$4.50	
Baldwin.....per doz. \$5.00	
Bonanza.....each \$7.50	
Dandy.....each \$7.50	
Eureka, 1898.....each \$12.00	
Family Bay State.....per doz. \$12.00	
Hudson's Little Star.....per doz. \$4.00	
Hudson's Rocking Table.....per doz. \$5.50	
Improved Bay State.....per doz. \$27.00 @ 30.00	
New Lightning.....per doz. \$5.50	
Reading 78.....per doz. \$4.00	
Reading 79.....per doz. \$7.00	
Turn Table '98.....per doz. \$5.50	
White Mountain.....per doz. \$4.00	

Potato—

Saratoga.....per doz. \$5.50

White Mountain.....per doz. \$4.50

Picks and Mattocks—

List Feb. 23, 1899.....65 @ 65 & 10%

Pinking Irons—

See Irons, Pinking.

Pins—**Escutcheon—**

Brass.....60 @ 60 & 5%

Iron, list Nov. 11, '85.....60 @ 60 & 5%

Pipe, Cast Iron Soil—

Factory Shipments.

Standard, 2-6 in.....50 @ 50 & 10%

Extra Heavy, 2-6 in.....50 @ 10 @ 60%

Fittings.....60 @ 60 & 10%

Pipe, Wrought Iron—

Factory Shipments.

List February, 1899.

Plain and Galvanized:

Carload lots.....50 @ 10 @ 50 & 10 & 10%

Less than carload lots.....50 & 5 @ 50 & 10%

Screw and Socket Casing.....40 & 5%

Inverted Joint Casing.....35 & 5%

Cold Drawn Seamless Steel Tubing.....60%

Planes and Plane Irons—**Wood Planes—**

Molding.....40 & 2 1/2 @ 40 & 5%

Bench, First quality.....45 & 10 @ 45 & 10 & 5%

Bench, Second quality.....50 & 10 @ 50 & 10 & 5%

Bailey's (Stanley R. & L. Co.).....50 & 10 @ 50 & 10 & 10%

Gage Self Setting.....35%

Iron Planes—

Bailey's (Stanley R. & L. Co.).....50 & 10 @ 50 & 10 & 10%

Chaplin's Iron Planes.....50 & 10 @ 50 & 10%

Miscellaneous Planes (Stanley R. & L. Co.).....25 & 10 @ 25 & 10 & 10%

Sargent's.....50 & 10 @ 60%

Plane Irons—

Wood Bench Plane Irons.....50 & 10%

Buck Bros.....30%

Butcher's.....\$5.00 @ 5.20 to 5

Stanley R. & L. Co. 50 & 10 @ 50 & 10 & 10%

L. & I. J. White.....20 & 5 @ 25%

Plates—

Felloe.....lb 3 1/2 @ 3 1/2 c

Self-Sealing Pie Plates (S. S. & Co.), per doz. \$3.00.....50%

Pliers and Nippers—

Gas.....7 8 9 10-in.

Best.....\$3.25 \$5.00 \$1.75 doz.

Good.....\$1.40 2.25 2.75 3.25 doz.

Ame Nippers.....40 @ 40 & 5%

Bernard's:

Parallel Pliers, &c.....\$3.45

Paragon Pliers.....50%

Lodi Pliers.....50%

Elm City Fence Pliers.....3.45

Button's.....65 @ 70%

Heller's Farriers' Pincers and Tools—

Morrill's Parallel, per doz. \$12.00.....	40@40&5
P., S. & W. Cast Steel.....	30&10@40
P., S. & W. Tinnors' Cutting Nippers.....	40@49&5
Utica Drop Forge & Tool Co., Bliss and Wiggins all kinds.....	40@49&5

Pulleys—

Hay Fork, Swivel or Solid Eye
doz. \$1.60 to \$2.00

Hay Fork, Stowell's Anti-Friction, 5-in.
Wheel, # doz. \$12.00 40%
Hot House, Awning, &c. 60% to 10%
Japanned Clothes Line 70% to 10%
Japanned Side 70% to 10%
Stowell's Ceiling or End, Anti-Friction 60%
Stowell's Dumb Waiter, Anti-Friction 60% to 10%

Stowell's Electric Light
Stowell's Side, Anti-Friction 60% to 10%
Sash (Auger Mortise):
Common Sense, 1 1/4 in., # doz., 15¢;
2 in., 20¢.
Empire 1 1/4 in., 17¢; 2 in., 19¢
I. C. 1 1/4 in., 15¢; 2 in., 17¢
Ideal No. 13 1 1/4 in., # doz., 20¢
Improved 1 1/4 in., 17¢; 2 in., 19¢
Niagara 1 1/4 in., 16¢; 2 in., 19¢
No. 26, Troy 1 1/4 in., 16¢; 2 in., 19¢
Star 1 1/4 in., 16¢; 2 in., 19¢
Acme 1 1/4 in., 18¢; 2 in., 20¢
Tackle Blocks—See Blocks.

Pumps—

Cistern 60% to 60%
Pitcher Spout 75%
Pump Leathers, all sizes, gro. \$5.00
Pint & Walling's Fast Mail 50% to 55%
Pint & Walling's 1 1/2 in. Spout 75%
Myer's Pumps, low list 50%
Contractors' Rubber Diaphragm Non-chokable, B. & L. Block Co. 30%

Punches—

Revolving (4 tubes) doz. \$5.50 to \$7.75
Saddlers' or Drive, good, doz. 65% to 70%
Spring, good quality \$1.70 to \$1.80

Bemis & Call Co.'s Cast Steel Drive 50% to 55%
Bemis & Call Co.'s Check 55%
Bemis & Call Co.'s Spring 50% to 55%
Niagara Hollow Punches 45%
Niagara Solid Punches 55%
Spring, Leach's Pat. 15%
Steel Screw, B. & K. Mfg. Co. 40%
Timmers' Hollow, P. S. & W. Co. 35% to 40%
Timmers' Solid, P. S. & W. Co., # doz. \$1.44 50%

Rail—**Barn Door, &c.—**

Barn Door, Light, 1/4 in. 1/4 3/4 3/4
100 feet, # doz. \$2.00 \$2.50 \$3.00
B. D., for N. E. Hangers:
Small Med. Large
100 feet, # doz. \$2.20 \$2.70 \$3.20
Sliding Door, Bronzed Wrt Iron, ft. 6 1/4
Sliding Door, Iron Painted, 2 1/2 to 3
Sliding Door, Wrought Brass, 1 1/2
in. lb. 36c. 30%
Cronk's Double Braced Steel Rail, 100 ft. 3 1/2
Lanes' O. N. T. # 100 ft. 1 inch, \$3.00
Lanes' Standard, # 100 ft. 4.25
McKinney's None Better, # ft. 8¢
McKinney's Standard, # ft. 3 1/4
Moore's Wrt. Bracket, Steel 3 1/4
Stowell's Steel Rail, Plain 15%

Rakes—

Aug 1, 1899, List:
Cast Steel 70% to 85%
Malleable 65% to 70%
Fort Madison Red Head Lawn \$3.25
Fort Madison Blue Head Lawn \$3.00

Rasps, Horse—

Diston's 75%
Heller Bros. 60% to 10%
New Nicholson Horse Rasp 70% to 10%
See also Files.

Razor Straps—

See Straps, Razor.

Reels—**Fishing—**

Hendryx Aluminum, German Silver, Gold, Bronze, Silver, Rubber, Popolo and Salmon, Single Action, Multiplying and Quadruple, all sizes, 25%
Hendryx Single Action Series, 102P and PN, 202P and PN, 102 PR and PRN, 202 PR and PRN, 304 P and PN, 09304P and PN, 502 and 502N, 802 and 802N, 02084N, Competitor 50%
Hendryx Multiplying and Quadruple Series, 3004N and PN, 4N and PN, 2904N, 2904P and PN, 092904PN, 0924 and 0924N, 5009N and PN 40% to 10%

Registers—

For points on Mississippi River and East:
Black Japanned 50% to 10%
White Japanned 30% to 10%
Bronzed Finishes 30%
Nickel Plated 30% to 10%
Electro Plated in Brass, &c. 30% to 10%
White Porcelain 30%
Solid Brass and Bronze Metal, 50%
Note—Higher prices are quoted in territory further West.

Rings and Ringers—**Bull Rings—**

Steel 2 3/4 3 Inch.
\$0.75 0.85 0.85 doz.
Copper 1.10 1.30 1.50 doz.

Hog Rings and Ringers—

Hill's Rings, gro. boxes, \$3.75 to \$4.00
Hill's Ringers, G. I. doz. 50% to 55%
Blair's Rings, # doz. 55% to 60%
Blair's Ringers, # doz. 70% to 75%
Brown's Rings, # gro. \$1.25 to \$1.50
Brown's Ringers, # doz. 55% to 60%
Perfect Rings, # doz. \$7.25 to \$7.75
Perfect Ringers, # doz. 75% to 80%

Rivets and Burrs—

Copper 40% to 10% to 50%
Iron or Steel:
Timmers' 55% to 55% to 10%
Miscellaneous 55% to 55% to 10%

Rivet Sets—See Sets.**Roasting and Baking**

Pans—See Pans, Roasting and Baking.

Rollers—

Acme, Stowell's Anti-Friction 50%
Barn Door, Sargent's list, 60% to 10% to 70%
Lane's, Stay 35% to 40%
Stowell's Barn Door Stay, # doz. \$1.25

Rope—

Manila, 7-16 in. and larger, lb. @ 15 1/2 c
Manila, 3/4 inch lb. @ 16 c
Manila, 1/2 and 5-16 in. lb. @ 16 1/2 c
Manila, Tarred Rope, 15 thread, lb. @ 15 1/2 c
Manila Hay Rope Med'm lb. @ 15 1/2 c
Sisal, 7-16 in. and larger, lb. @ 10 1/2 c
Sisal, 3/4 inch lb. @ 11 c
Sisal, 1/2 and 5-16 in. lb. @ 11 1/2 c
Sisal, Hay Rope, 2 to 10 ply, Tarred, Medium lb. @ 10 1/2 c
Lath Yarn, lb. @ 10 c
Cotton Rope, lb. @ 10 c
Best, 1/4 in. and larger, lb. 13 to 14 c
Med'm, 1/4 in. and larger lb. 10 to 12 c
Com., 1/4 in. and larger lb. 8 to 10 c
Jute Rope, lb. @ 6 1/2 c

Wire Rope—

List July 1, '99 30% to 2 1/2 %

Ropes, Hammock

Covert, 1/2 C. 45% to 2%
Covert Saddle Works 60%

Rules—

Boxwood 75% to 10% to 10% to 75% to 10% to 10%
Ivory 40% to 10% to 10% to 40% to 10% to 10%
Lufkin's Steel 50% to 10%
Lufkin's Lumber 50% to 10%
Stanley R. & L. Co., Boxwood 75% to 10% to 75% to 10% to 10% to 10%
Ivory 40% to 10% to 40% to 10% to 10% to 10%

Sad Irons—See Irons, Sad.**Sand and Emery Paper and Cloth—**

See Paper and Cloth.

Sash Cords—See Cord, Sash.**Sash Locks—See Locks, Sash.****Sash Weights—**

See Weights, Sash.

Sausage Stuffers or Fillers—

See Stuffers or Fillers, Sausage.

Saw Frames—

See Frames, Saw.

Saw Sets—See Sets, Saw.**Saw Tools—See Tools, Saw.****Saws—**

Note.—Extra 5% often given on Circulars, Cross Cuts, &c., and extra 5% to 7 1/2 % on Hand, Butcher, &c.

Atkins' Circular 50%
Atkins' Band 50%
Atkins' Cross Cut 40%
Atkins' Mulay, Mill and Drag 40% to 10%
Atkins' One-Man Saw 40% to 10%
Atkins' Wood Saws 40% to 10%
Diston Circular Solid and Insure 50%
Tooth: Diston Band 2 to 14 in. wide 60%
Diston B and 1/4 to 1 1/2 70%
Diston Crosscuts 50%
Diston Narrow Crosscuts 55%
Diston Mulay, Mill and Drag 50%
Diston Framed Woodsaws 35%
Diston Woodsaw Blades 40%
Diston Woodsaw Roll 25%
Diston Hand Saws, Nos. 12, 99, 9 10, 1100, Ds, 120, 72, 8 35%
Diston Hand Saws, Nos. 7, 107, 107 1/2 30%
3, 1, 0, 0, Combination 30%
Diston Compass, Kynol, &c. 25%
Diston Butcher Saws and H. 45%
C. E. Jennings & Co.'s 25% to 5% to 30% to 5%
Peace Circular and Mill 50%
Peace Cross Cuts, list Jan. 1, '99 50%
Peace Hand, Panel and Rip 30%
Richardson's Circular and Mill 60%
Richardson's X Cuts, list Jan. 1, '99 45% to 10% to 5%
Richardson's Hand, &c. 30%
Simonds' Circular Saws 50%
Simonds' Crescent Ground Cross Cut Saws 35%
Simonds' One-Man Cross Cuts 40% to 10%
Simonds' Gang Mill, Mulay and Drag Saws 45% to 45% to 5%

Hack Saws—

Diston Circular Blades 25%
Diston Key-stone 30%
Diston Hack Saw Frames 30%
Griffin's complete 50% to 10%
Griffin's Hack Saw Blades 50% to 10%
Star Hack Saws and Blades 15% to 10%

Scroll—

Barnes' No. 7, #15 25%
Barnes' Scroll Saw Blades 40%
Barnes' Velocipede Power Scroll Saw, without boring attachment, \$18 20%
with boring attachment, \$20 20%
Lester, complete, \$10.00 15% to 10%
Rogers, complete \$4.00 15% to 10%

Scale Beams—

See Beams, Scale.

Scales—

Family, Turnbull's 30% to 30% to 10%
Hatch, Counter:
Platform, 1 lb. by 1/4 oz. doz. \$5.75
Two Platforms, 8 lb. by 1/4 oz. doz. \$16.00
Union Platform, Plain \$2.00 to \$2.10
Union Platform, Striped \$2.15 to \$2.25
Chattillon's Eureka 25%
Chattillon's Favorite 40%
Chattillon's Grocers' Trip Scales 50%
Pelouze Scales—Family, Candy, Grocers' and Postal 40%
"The Standard" Portables 45%
"The Standard" R. R. and Wagon 50%

Scrapers—

Box, 1 Handle doz. \$2.25 to \$2.75
Box, 2 Handle doz. \$3.75 to \$4.00
Ship, No. 1, doz. \$3.50; No. 2, \$2.25 to \$2.50
Adjustable Box Scraper (S. R. & L. Co.) \$8.00 40% to 10%
Foot, W. E. Pratt Mfg. Co. # doz. \$1.15 to \$1.25

Screen Window and Door

Frames—See Frames.

Screw Drivers—

See Drivers, Screw.

Screws—**Bench and Hand—**

Bench, Iron, # doz. 1 in. \$2.50 to \$2.75;
1 1/4 \$2.85 to \$3.10; 1 1/2 \$3.35 to \$3.50
Bench, Wood, Beech, # doz. \$3.50 to \$3.75
Hand, Wood 35% to 40%
Hand, Grand Rapids 35%

Coach, Lag and Hand Rail—

Lag, Common Point, list Oct. 1, '99 65% to 10% to 5%
Coach and Lag, Gimlet Point, list Oct. 1, '99 65% to 10% to 5%
Hand Rail, list Jan. 1, '81 82 1/2 % to 2%

Jack Screws—

Millers' Falls 50% to 10% to 10%
Millers' Falls, Roller 50% to 10%
P. S. & W. 40% to 5% to 40% to 10%
Sargent 40% to 10% to 80% to 10%

Machine—

List Jan. 1, '98.
Flat or Round Head, Iron 50%
Flat or Round Head, Brass 50%

Set and Cap—

Set (Iron or Steel) 60%
Sq. Hd. Cap 55%
Hex. Hd. Cap 50%

Wood—

List Nov. 10, 1898. Discounts adopted June 23, '99.

Flat Head, Iron 90%
Round Head, Iron 75%
Flat Head, Brass 77 1/2 %
Round Head, Brass 72 1/2 %
Flat Head, Bronze 72 1/2 %
Round Head, Bronze 70%
Drive Screws 87 1/2 %
Note.—An extra 5 or 10% is often given.

Scroll Saws—See Saws, Scroll.**Scythes—****Scythe Snaths—**

See Snaths, Scythes.

Seeders—**Raisin—**

Enterprise 25% to 30%

Sets—**Awl and Tool—**

Brad Awl and Tool Sets:
Wood Hdl., 10 Awls, doz. \$2.00 to \$2.25
Wood Hdl., 14 Awls, 6 Tools doz. \$3.50 to \$2.50

Alken's Sets, Aw and Tools:
No. 20, # doz. \$10.00 60% to 10% to 10% to 5%
Fray's Adj. Tool H. dis. Nos. 1, #12; 2, #18; 3, #12; 4, #9; 5, #7 50%
Millers' Falls Adj. Tool H. dis. No. 1, #12; No. 4, #12; No. 5, #18 15% to 10%
Stanley's Excelsior No. 1, #7.50; No. 2, #4.00; No. 3, #5.50 40% to 10% to 40% to 10% to 5%

Garden Tool Sets—

Pt. Madison Rakes, Shovel and Hoe # doz. \$9.00

Nail—

Round, assorted gro. \$3.25 to \$3.75
Octagon gro. \$3.25 to \$4.75
Knurled, Good gro. \$6.00 to \$5.50
Back Brothers Cannon's Diamond Point # gr. \$12.25
Snell's Corrugated, Cup Pt. 50%
Snell's Knurled, Cup Pt. 60% to 5%

Rivet—

Regular list 70% to 70% to 10% to 5%

Saw—

Alken's Genuine # doz. \$1.50 to \$5.00
Alken's Imitation # doz. \$3.00 to \$3.10
Atkin's Criterion # doz. \$6.00
Atkin's Adjustable # doz. \$8.00
Bemis & Call Co.'s Cross Cut 30% to 5%
Bemis & Call Co.'s Plane 30% to 5%
Bemis & Call Spring Hammer 30% to 5%
Diston's Star and Mosa ch. 25%
Hammer, Bemis & Call Co.'s new Pat. 45%

Morrill's No. 1, \$15.00 40% to 20%
Nos. 3 and 4, Cross Cut, \$23.00 40% to 20%
No. 5, Mill, \$31.00 40% to 20%
No. 10, \$15.50 40% to 20%
No. 11, \$16.00 40% to 20%
Taintor Positive, # doz. \$18 80%

Sharpeners, Knife—

Tanite Mills # gross, \$14.40 25% to 33% to 45%

Shaves, Spoke—

Iron doz. \$1.00 to 1 25
Wood doz. \$1.75 to 2 25
Bailey's (Stanley R. & L. Co.) 50% to 10%
Goodell's, # doz. \$9.00 15% to 10%

Shears—

Cast Iron... 7 8 9 in.
Best \$16.00 13.00 20.00 gro.
Good \$13.00 15.00 17.00 gro.
Cheap \$5.00 6.00 7.00 gro.
Straight Trimmers, &c.:
Best quality, Jap. 70% to 5% to 70% to 10%
Nickel 60% to 5% to 60% to 10%
Fair qual. Jap. 80% to 10% to 80% to 10% to 10%
Nickel 75% to 5% to 75% to 10%

Tailors' Shears—

Acme Cast Shears 40% to 40% to 10%
Heinrich's Tailors' Shears 40% to 40% to 5%
National Cutlery Co., Nickel 70% to 10%
National Cutlery Co., En Hdis. 70% to 10%
Seymour's, Jap. 70% to 10%
Seymour's Nickel 60% to 40% to 5%
Seymour's Tailors' Shears 40%
Wilkinson's Hedge 50%
Wilkinson's Sheep 15%

Timmers' Snips—

Forged Handles, Steel Blades 20% to 10%
Malleable Handles, Laid with Steel 40%
Forged Handles, Steel Blades, Berlin 40% to 10%
Niagara Snips 40%
Seymour's 40% to 40% to 5%

Pruning Shears and Tools—

Diston's Combined Pruning Hook and Saw, # doz. \$15.00 25% to 25% to 10%
Diston's Pruning Hook, # doz. \$12.00 25% to 25% to 10%
John T. Henry Mfg. Company:
Pruning Shears all grades 50% to 5%
Orange Shears 50% to 10%
Grape 50% to 10%
Tree Pruners 75%
P. S. & W. Co. 38 1/2 % to 33 1/2 % to 10%
Seymour's 60% to 10% to 70% to 5%

Sheaves—Sliding Door—

Stowell's Anti-Friction 50%
Patent Roller 60% to 10% to 60% to 10% to 5%
Patent Roller Hatfield's, Sargent's list 80% to 10% to 80% to 10% to 7%
Reading 70% to 10% to 75%
R. & E. 45% to 10%
Wrightville, Hatfield Pattern 80% to 10%

Sliding Shutter—

Reading list 70% to 10% to 75%
R. & E. 60% to 60% to 10%
Sargent's list 50% to 5% to 50% to 10% to 5%

Shells—**Shells, Empty—**

Brass Shell, Empty:
First quality, all gauges 60% to 5%
Club, Rival, Climax, 10 and 12 gauge 65% to 5%

Paper Shells, Empty:

Club, Rival, Climax, 14, 16 and 20 gauge (\$7.50 list) 20% to 10% to 5%
Club, Rival, Climax, 10 and 12 gauge 83 1/2 % to 5%
Acme, Leader, New Rapid, 8 no-leas, 10, 12, 16 and 20 gauge 38 1/2 % to 10% to 5%
Trap and Metal Lined, 10, 12, 16 and 20 gauge 38 1/2 % to 10% to 5%
Primrose Club, B. & W. Rival, Yellow Rival, New Climax, 10, 12, 16 and 20 gauge 20%
High Base, Nitro, Repeater, DeLancey, 10, 12, 16 and 20 gauge 15%

Shells, Loaded—

Loaded with Black Powder 40% to 5%

Loaded with Nitro Powder 40% to 10% to 10% to 5%

Shoes, Horse, Mule, &c.—

Factory Shipments:
Horse and Mule, per keg \$3.50 to \$3.70
Burdens' all sizes \$3.50
Bryden, Phoenix, Perkins, &c. \$3.00
Diamond State, Shenberger, Crescent, &c. \$3.80 5%

Shot—

Drop, up to B, 25-lb. bag, \$1.35 to 1.45
Drop, up to B, 5-lb. bag 30
Drop, B and larger, 25-lb. bag \$1.60 to 1.70

Drop, B and larger, 5-lb. bag .35
Buck, 25 lb. bag \$1.60 to 1.70
Buck, 5-lb. bag 35
Chilled, 25-lb. bag \$1.60 to 1.70
Dust Shot, 25 lb. bag 2.00
Dust Shot, 5-lb. bag .50

Shovels and Spades—

No. 2, Polished, Sq. or Rd. Point, D or L Handle:

1st Grade, 2d Grade.
Plain Back \$10.50 \$9.60
Strap Back 9.30 9.00
Cleveland Pat'n 10.30 9.30
C3, D4.
3d Grade, 4th Grade.
Plain Back \$3.70 \$3.10
Strap Back 3.10 7.50
Cleveland Pat'n 8.50 7.80

All other sizes add 50c doz.

Black deduct 30c doz.

Note.—The above recently advanced prices to small retailers are often out by jobbers.

Washers—
Leather, Axle—
 Solid.....80¢10¢10¢85¢
 Patent.....85¢85¢55¢
 Coil: 1/4 1 1/4 1 1/4 Inch.
 12c 13c 14c 16c per 100
Iron or Steel—
 Size bolt... 5-16 3/4 1/2 3/8 3/4
 Washers.....\$5.80 5.30 4.00 3.80 3.50
 In lots less than one keg add 1/4c per
 lb., 5-lb. boxes add 1/4c to list.
 NOTE—Jobbers' prices generally lower
 than manufacturers'.

Washer Cutters—
 See Cutters, Washer.
Washing Machines—
 See Machines, Washing.
Water Coolers—
 See Coolers, Water.

Weaners—
 Tyler's New Hatter—No. 1 # doz. \$3.45;
 No. 2, \$3.70; No. 3, \$4.00; No. 4, \$4.80
 Tyler's Safety—Nos. 1 and 2, # doz. \$1.70;
 No. 3, \$2.00; No. 4, \$2.80.

Wedges—
 Oil Finish.....lb. 5/4¢1¢

Aze Finish.....lb. 4¢4 1/4¢

Weights, Sash—

Carloads at factory.....\$18.00@80.00
 Less than carloads at factory.....
 \$20.00@22.00
 Note—Some Foundries are naming
 higher prices.

Well Buckets, Galvanized

See Pails, Galvanized.

Wheels Well—

8-in., \$1.75@3.00; 10-in., \$2.25@3.60;
 12-in., \$2.75@3.25; 14-in., \$4.00@4.50

Wire and Wire Goods—

Market: Nos. 6 to 16:
 Br. & Ann.....70¢5¢75¢1/2¢
 Cop'd.....65¢5¢67¢1/2¢
 Galv.....65¢5¢67¢1/2¢
 Tin'd, Tin'd list.....75¢5¢75¢
 Stone, Br. and Ann'd:
 Nos. 19 to 26.....77¢7¢77¢1/2¢
 Nos. 27 to 36.....77¢5¢77¢1/2¢
 Annealed Wire on Spools.....
 60¢10¢80¢10¢5¢
 Brass, list Feb. 26, '96.....15¢

Copper, list Feb. 26, '96.....15¢
 Cast Steel Wire.....50¢
 Stubs' Steel Wire.....\$6.00 to \$2, 40¢
 Wire Clothes Line, see Lines.
 Wire Picture Cord, see Cord.

Bright Wire Goods—

Iron and Brass, list July 1, 1899....
 80¢10¢30¢10¢10¢

Wire Cloth and Netting—

Galvanized Wire Netting.....
 80¢90¢5¢
 Painted Screen Cloth per 100 ft...
 \$1.50@....

Wire Barb—See Trade Report.

Wire, Rope—See Rope, Wire.

Wrenches—

Agricultural.....75¢5¢75¢10¢
 Baxter's S.....70¢
 Coes' Genuine.....33¢1/2¢10¢5¢3¢
 Coes' "Mechanics".....33¢1/2¢10¢5¢3¢
 Aome.....80¢10¢
 Alken's Pocket (Bright).....\$2.00@3.20
 Alligator.....80¢10¢10¢

Bemis & Call's:
 Adjustable S.....85¢5¢
 Adjustable Pipe.....40¢
 Briggs' Pattern.....80¢10¢
 Combination Black.....40¢10¢
 Combination Bright.....40¢10¢
 Cylinder or Gas Pipe.....55¢
 Extra Heavy.....50¢
 Merrick's Pattern.....50¢
 No. 3 Pipe, Bright.....55¢
 Hindley Automatic.....40¢
 Boardman's.....35¢
 Bull Dog, W. & B.....60¢10¢10¢
 Donohue's Engineer.....40¢10¢
 Eagle.....50¢10¢
 Hercules.....70¢
 Solid Handles, P. B. & W.....50¢
 Stevenson.....60¢10¢10¢
 Stillson's.....55¢

Wrought Goods—

Staples, Hooks, &c., list March 17,
 '92.....80¢20¢35¢

Yokes, Neck—

Covert Saddlery Works, Trimmings.....1.00@5¢
 Covert Saddlery Works, Neck Yoke
 Centers.....70¢

Yokes, Ox, and Ox Bows—

Fort Madison's Farmers & Freighters'.....
 list net

Zinc—

Sheet.....lb 7 1/4¢80

PAINTS, OILS AND COLORS.—Wholesale Prices.

White Lead, Zinc, &c.

Lead, Foreign white, in Oil.....7 1/4¢8 1/4¢
 Lead, American White, in Oil:
 Lots of 500 lb or over.....6¢
 Lots less than 500 lb.....6 1/4¢
 Lead, White, in oil, 25 lb tin
 pails, add to keg price.....3 1/2¢
 Lead, White, in oil, 12 1/2 lb tin
 pails, add to keg price.....3 1/4¢
 Lead, White, in oil, 1 to 5 lb as
 sorted tins, add to keg price.....1¢
 Lead, White, Dry in bbls.....5¢
 Lead, American, Terms: On lots of 500
 lbs. and over, 60 days, or 2¢ for cash if
 paid in 15 days from date of invoice.
 Zinc, American, dry.....# 4 1/4¢5¢
 Zinc, Paris, Red Seal.....# 9¢
 Zinc, Paris, Green Seal.....# 9¢
 Zinc, Antwerp, Red Seal.....# 7 1/2¢
 Zinc, Antwerp, Green Seal.....# 7 1/2¢
 Zinc, V. M. in Poppy Oil, G. Seal
 lots of 1 ton and over.....11 1/4¢
 lots less than 1 ton.....12 1/2¢
 Zinc, V. M. in Poppy Oil, Red Seal,
 lots of 1 ton and over.....10 1/4¢
 lots less than 1 ton.....11 1/4¢
 Discounts.—V. M. French Zinc.—Dis-
 counts to buyers of 10 bbl. lots of one or
 assorted grades, 1¢; 25 bbls., 2¢; 50 bbls.,
 4¢. No discount allowed on less than 10
 bbl. lots.

Dry Colors.

Black, Carbon.....# 5¢8¢10¢
 Black, Drop, Amer.....# 3¢5¢
 Black, Drop, Eng.....# 5¢10¢
 Black, Ivory.....# 9¢20¢
 Blue, Celestial.....# 5¢4¢8¢
 Blue, Chinese.....# 35¢40¢
 Blue, Prussian.....# 30¢35¢
 Blue, Ultramarine.....# 7¢35¢
 Brown, Spanish.....# 4¢1¢
 Brown, Vandyke, Amer.....# 14¢2¢
 Brown, Vandyke, Foreign.....# 9¢5¢
 Carmine, No. 40, in bulk.....\$2.20@2.25
 Carmine, No. 40, in bottles. 2.40¢

Carmine, No. 40, in ounce bot. 2.40@3.50
 Green, Chrome, ordinary.....# 5¢6¢
 Green, Chrome, pure.....# 25¢
 Lead, Red, bbls. and 1/2 bbls.....# 6¢
 Lead, Red, kegs.....# 6 1/4¢
 Litharge, bbls. and 1/2 bbls.....# 6¢
 Litharge, kegs.....# 6 1/4¢
 Ocher, French Washed.....# 14¢8¢
 Ocher, German Washed.....# 14¢8¢
 Ocher, American.....# ton \$10.00@15.00
 Orange Mineral, English.....# 10¢10 1/4¢
 Orange Mineral, French.....# 11 1/4¢
 Orange Mineral, German.....# 10¢10 1/4¢
 Orange Mineral, American.....# 7 1/4¢8¢
 Red, Indian, English.....# 4 1/4¢8¢
 Red, Indian, American.....# 3¢3 1/4¢
 Red, Turkey, En. II h.....# 7 1/4¢10¢
 Red, Tuscan, English.....# 7¢10¢
 Red, Venetian, Amer.....# 100 lb. 8¢1.10
 Red, Venetian, English.....# 14¢8¢
 Sienna, Italian, Burnt and
 Powdered.....# 2 1/4¢5¢
 Sienna, Ital. Raw, Powd.....# 2 1/4¢5¢
 Sienna, American, Raw.....# 14¢1 1/4¢
 Sienna, American, Burnt and
 Powdered.....# 14¢1 1/4¢
 Talc, French.....# 100 lb \$1.25@1.50
 Talc, American.....# 80¢1.10
 Terra Alba, French.....# 100 lb. 80¢1.00
 Terra Alba, English.....# 85¢1.00
 Terra Alba, American No. 1.....# 70¢
 Terra Alba, American No. 2.....# 45¢50¢
 Umber, Turkey, Bnt. & Pow.....# 24¢3¢
 Umber, Turkey, Raw & Powd.....# 24¢3¢
 Umber, Bnt. Amer.....# 14¢1 1/4¢
 Umber, Raw, Amer.....# 14¢1 1/4¢
 Yellow, Chrome.....# 10¢25¢
 Vermilion, American Lead.....# 10¢25¢
 Vermilion, Quicksilver, bbls
 or kegs.....# 67¢
 Vermilion, Quicksilver, bags.....# 68¢
 Vermilion, Quicksilver, sm' pkgs.....# 69¢
 Vermilion, English, Import.....# 69¢
 Vermilion, Artificial.....# 69¢
 Vermilion Chinese.....# 80¢90¢

Colors in Oil.

Black, Lampblack, Best.....10¢14¢

Black, Lampblack, Common.....10¢11¢
 Blue, Chinese.....# 35¢40¢
 Blue, Prussian.....# 30¢35¢
 Blue, Ultramarine.....# 12¢16¢
 Brown, Vandyke.....# 8¢13¢
 Green Chrome.....# 8¢14¢
 Green, Paris.....# 13¢
 Sienna, Burnt.....# 10¢13¢
 Sienna, Raw.....# 8¢13¢
 Umber, Raw.....# 8¢13¢
 Umber, Burnt.....# 8¢13¢

Miscellaneous.

Barytes Foreign, # ton.....\$18.00@20.00
 Barytes, Amer. floated.....19.00@20.00
 Barytes, Crude.....# 4.00@10.00
 Chalk, in bulk.....# ton 2.15@2.25
 Chalk, in bbls.....# 100 lb 35¢
 China Clay, English.....# ton 15.00@17.00
 Cobalt, Oxide.....# 100 lb 2.00@2.10
 Whiting, Common.....# 100 lb 42¢45¢
 Whiting, Gliders.....# 47¢56¢
 Whiting, extra Gliders.....# 57¢64¢

Putty.

In barrels and 1/2 bbls.....# 17-10
 in tubs.....# 14¢
 in tin cans.....# 8¢
 in bladders.....# 2-30

Spirits Turpentine.

In Southern bbls.....# 52¢
 in machine bbls.....# 52 1/2¢

Glue.

Low Grade.....# 13¢15¢
 Cabinet.....# 13¢16¢
 Medium White.....# 14¢16¢
 Extra White.....# 16¢25¢
 French.....# 13¢15¢
 Irish.....# 13¢15¢

Animal, Fish and Vegetable Oils.

Linseed, City, raw.....# gal. 44¢45¢
 Linseed, City, boiled.....# 46¢47¢
 Linseed, State and West'n, raw 44¢45¢

Linseed, raw Calcutta seed.....# 45¢
 Lard, Prime.....# 44¢46¢
 Lard, Extra No. 1.....# 38¢39¢
 Lard, No. 1.....# 34¢36¢
 Cotton-seed, Crude.....# 24¢24 1/2¢
 Cotton-seed, Summer Yellow,
 prime.....# 27¢28¢
 off grades.....# 26¢26 1/2¢
 Sperm, Crude.....# 28¢
 Sperm, Natural Spring.....# 28¢
 Sperm, Bleached Spring.....# 28¢
 Sperm, Natural Winter.....# 53¢
 Sperm, Bleached Winter.....# 59¢
 Whale, Crude.....# 28¢
 Whale, Natural Winter.....# 48¢
 Whale, Bleached Winter.....# 45¢
 Whale, Extra Bleached Win.....# 48¢
 Menhaden, Crude, Sound.....# 25¢
 Menhaden, Light Pressed.....# 28¢
 Menhaden, Bleached Winter.....# 33¢
 Menhaden, Extra Bleached.....# 35¢
 Tallow, Western, prime.....# 48¢
 Coconut, Ceylon.....# 64¢65¢
 Coconut, Cochlan.....# 74¢75¢
 Cod, Domestic.....# 33¢35¢
 Cod, Newfoundland.....# 34¢40¢
 Red, Saine.....# 29¢31¢
 Red, Saponified.....# 4¢5¢
 Bernk.....# 37¢
 Straits.....# 33¢
 Olive, Italian, bbls.....# 58¢60¢
 Neatsfoot, prime.....# 45¢50¢
 Palm, prime, Lagos.....# 5¢6¢

Mineral Oils.

Black, 29 gravity, 25@30 cold
 test.....# gal. 10¢11¢
 Black, 29 gravity, 15 cold test.....# 11¢12¢
 Black, summer.....# 10¢10 1/4¢
 Cylinder, light filtered.....# 14¢17¢
 Cylinder, dark filtered.....# 12¢13¢
 Paraffine, 908-907 gravity.....# 11¢11 1/2¢
 Paraffine, 908 gravity.....# 11¢11 1/2¢
 Paraffine, 883 gravity.....# 9¢10¢
 Paraffine, red, No. 1.....# 19¢19 1/2¢
 in small lots 1/4¢ advance.

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